ANALYSIS OF MARKET RISK IN STOCK INVESTMENT USING VALUE AT RISK METHOD (STUDY ON MANUFACTURING COMPANIES IN LQ-45 LISTED ON INDONESIA STOCK EXCHANGE)

THESIS

To Meet Requirements

Achieving Masters

By:

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FINANCIAL MANAGEMENT

DOUBLE DEGREE MASTER OF MANAGEMENT PROGRAM

GRADUATE ECONOMIC AND BUSINESS FACULTY

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T E S I S

ANALYSIS OF MARKET RISK IN STOCK INVESTMENT USING VALUE AT RISK METHOD (Study on Manufacturing Companies in LQ 45 Listed On Indonesia Stock Exchange)

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2012	Research of illegal mines in the town of Blitar	Lecturer's projek
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	THE PROSPERITY OF THE PEOPLE OF INDONESIA)	
2013	Support of banking Intermediation through the decrease of Credit interest rates	Bank Indonesia Competition
2014	*The effect of Capital Adequacy Ratio (CAR), Return On Asset (ROA), Non-Performing Loan, and Interest Rate of SBI on total outstanding of loans (Studies in Foreign Exchange Banks that listed in BEI over period 2010-2011).*	Minor Thesis
2014	Performance analysis of banking that is listed on the Indonesia stock exchange	Lecturer's project
2016	ANALYSIS OF MARKET RISK IN STOCK INVESTMENT USING VALUE AT RISK METHOD (STUDY ON MANUFACTURING COMPANIES IN LQ-45 LISTED ON INDONESIA STOCK EXCHANGE)	Thesis

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2011-2012	KMK-BEM (Student Association of management department, Economics Faculty)	Vice Coordinator
2011	KMK-BEM (Student Association of management department, Economics Faculty)- welcoming new catholic students event	Vice Coordinator
2011	BEM (Student Association of Economics Faculty)- welcoming new students event	Member of "BIDIK" department
2011	BEM (Student Association of Economics Faculty)- social in action event	Coordinator of public relations department
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Year	Descriptions
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2014	Certificate computing fundamental in IC3
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Sincerely,

Yoseva Maria Pujirahayu Sumaji

UCAPAN TERIMA KASIH

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Praise thanks the presence of God Almighty who gave the ability to craft a Thesis with the title: “ANALYSIS OF MARKET RISK IN STOCK INVESTMENT USING VALUE AT RISK METHOD (STUDY ON MANUFACTURING COMPANIES IN LQ-45 LISTED ON INDONESIA STOCK EXCHANGE ” .

The purpose of this thesis is to achieve the degree of master of Business Administration, National Pingtung University of Science and Technology.

The writing of this Thesis cannot be undertaken and completed without the help and co-operation of various parties. For it, should have pronounced thanks to:

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Pingtung, Mei 26, 2016

ABSTRAK
(ABSTRACT)

Student ID : M10358030

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The contents of abstract in this thesis :

Capital flows as one part of this economic growth is sourced from the capital markets namely Indonesia stock exchange. The capital markets have a function of economics because capital markets provide a facility or vehicle which brings together two interests, namely those who have excess funds and those who need funds. Before investing, investors should set a goal of investing and the magnitude of the funds invested. Any investment decisions taken have the risks borne by the investor, either investment in bonds or stocks. Stocks with known characteristics of high risk-high return, which means the stock provides an opportunity to earn high profits but also potentially high loss risk. Value at Risk (VaR) models has been extensively used not only in the banking sector but also in calculating in many sectors. The aim of this paper is to outline Value at Risk methodology by giving more emphasis on variance covariance method, historical simulation, and Monte Carlo model. The model used to investigate the applicability and usefulness of VaR in stock investment in Indonesia Manufacturing companies. Using the methodologies as described, the maximum potential loss on each stock and its portfolio of nine stocks calculated at 95% confidence level. The models were validated using back testing and Kupiec test. The research found that there are different results of VaR calculated using variance covariance, historical simulation, and Monte Carlo models. However, variance covariance model is the valid one to measure the maximum potential loss of stocks.

Key words: value at risk, indonesia manufacturing companies, indonesia stock exchange(idx), variance-covariance, historical, monte carlo, back testing.

KATA PENGANTAR

Praise thanks the presence of God Almighty who gave the ability to craft a Thesis with the title: “ANALYSIS OF MARKET RISK IN STOCK INVESTMENT USING VALUE AT RISK METHOD (STUDY ON MANUFACTURING COMPANIES IN LQ-45 LISTED ON INDONESIA STOCK EXCHANGE ” .

The purpose of this thesis is to achieve the degree of master of Business Administration, National Pingtung University of Science and Technology. In the end of the preface this, I hope that this Thesis may be utilized for many parties. Amin

Pingtung, Mei 26, 2016

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1. INTRODUCTION

1.1 Background and Motivation

Indonesia has economic problems. The last few years, the Government of Indonesia tried to find a variety solutions to address the economic problems in Indonesia. The improvement of economic growth by the government of the last few years seemed to be giving a positive result. According to Industrial Ministry, quarter III in 2013, Indonesia's economic growth slows. Cumulatively, national economic growth during the quarter III in 2013 only reached 5.83%, lower than the cumulative growth in the same period in 2012 amounted to 6.26%. However, Indonesia's economic growth is still much better than economic growth in other Asian countries, except China and Philippines which are still growing above 7%. According to BPS (Central Bureau Of Statistics), Indonesia's economy in 2014 which is measured by the gross domestic product (GDP) on the basis of the applicable price reached Rp 10 trillion and GDP per capita reached Rp 41,8 million or US $3,531.5. Indonesia's economic growth in 2014 dropped to 5.02% in comparison with the growth of the economy in 2013 amounting to 5.58%. Quarter IV in 2014 (5.01%) compared with quarter IV in 2013 slowed down when compared to the same period of the previous year amounted to 5.61%.

According to Central Bureau Of Statistics (2015), Indonesia's economy is measured based on the magnitudes of the gross domestic product (GDP) on the basis of the price applicable, quarter III in 2015 reached Rp 2,982.6 trillion, and on the basis of constant prices 2010 reached Rp 2,311 trillion. Indonesia economic quarterly III in 2015 against quarter III in 2014 growing 4.73% compared to quarter II in 2015 (4.67%) but, slowed down compared to close to quarter III in 2014 (4.92%). Indonesia economic quarterly III in 2015 against the previous quarter grows 3.21%. While, the economy of Indonesia until quarter III in 2015 grows 4.71%. These economic growth efforts have a goal to encourage an influx of

foreign and domestic capital into productive sectors and also to open employment and boosts economic growth. This capital can become a source of development. This capital flow is very important, so the Government may not depend on foreign loans. Investors, mostly interested in investing stocks, especially in companies that already “go public” and were listed on the Indonesia stock exchange.

Capital flows as one part of this economic growth are sourced from the capital markets namely Indonesia stock exchange. The capital market has a function of economics because capital markets provide a facility or vehicle to bring importances together, namely those who have excess funds and those who need funds. Before investing, investors should set a goal of investing and the magnitude of the funds invested. Investment decisions are taken to have the risk for the investor, either investment in bonds or stocks. Stocks with known characteristics of high risk-high return, which means the stock provides an opportunity to earn high profits but also potentially high loss risk. Stock price fluctuations resulted in investors can receive a profit, nor loss. Not only are investors who have the risk of its investments, but the company will also have risks that exist within the company after investors make an investment. This risk is called speculative risk. Speculative risk, arguably includes a larger class of risk. Speculative risk is the uncertainty of events that may give rise to profits or loss. According to Aparna Gupta (2013: 9), the speculative risk can be categorized as market risk, credit risk, strategic, business, and reputational. The company shall manage those risks properly so can not impact on the earnings of the company and also the profits that given to investors.

Companies in the industrial sector in Indonesia have a major influence on economic growth in the industrial sector. Indonesia is a country with the greatest potential land for the development of the industrial sector. This related to a large number of existing resources, which are raw materials and labors in Indonesia.

According to the World Investment Report 2010-2011 release by the United Nation Conference on Trade and Development, Indonesia is 9th largest investment appeal in the world (UNCTAD, 2010).

The manufacturing industry is the most attractive sector to an investor to invest. The Ministry of industry has been optimistic about the growth of the manufacturing industry, although there are various obstacles including limited availability of infrastructure etc. (Industrial Ministry, 2013). In the situation of the world economy that still get recovered from the crisis, non oil & gas industry growth around 2013 remains showed a positive trend. Throughout in 2013, non oil & gas industry growth exceed economic growth. It presented by Industry Minister Mohamad S. Hidayat in a press conference on the performance of the industrial sector and the Ministry of industry in 2013 as well as the projected industrial growth in 2014 in the offices of the Ministry of industry Jakarta. According to Central Bureau Of Statistics Indonesia, the growth of production of large and medium manufacturing industry 2015 annually, grew 4.57% compared to 2014. The increase was mainly due to the rise in production of the pharmaceutical industry, Chemical drug products, and traditional medicines, increased to 12.53%, Industrial Goods of metal, not machines and equipment, increased to 9.47%, Nonmetallic Minerals Industry Goods and food, respectively rising 7.37%.

The growth of industrial production in large and medium manufacturing quarter IV in 2015 rose by 4.02% against quarter IV in 2014. The types of industries that are experiencing the rise mainly due to the rise in production of the pharmaceutical industry, Chemical drug products, and traditional medicine rise 15.27%, industrial computer, Electronic and optical Goods rose 11.36% and industrial rubber, Rubber and plastic goods from rising 8.15%. While the types of industries that experienced a decrease in the production of Apparel Industry is the largest down to 14.63%, industrial electric equipment down to 10.93%, and

industrial chemicals and Chemical goods down to 8.93%. The growth of industrial production in large and medium manufacturing quarter IV in 2015 rose by 1.69% against quarter III in 2015.

Production growth of micro and small manufacturing industry 2015 rose by 5.71% against the year 2014. During the last three years, occurred the rise in industrial production growth of micro and small manufacturing. In 2014, the production growth of micro and small manufacturing industries rose by 4.91% against the year 2013, and 2013 rose by 7.51% against the year 2012.

Large and medium manufacturing companies in Indonesia are public corporations which are public limited companies which shares have been owned by at least 300 (three hundred) stockholders and has a paid-in capital of at least Rp 3,000,000,000 (three billion rupias) or a number of shareholders and paid-in capital defined by government regulations.

1.2 Problem Identification

According to Markowitz (1952), the number of companies go public in Indonesia also has an impact on a large number of investors in and outside the country who want to invest. In investing, there is three runways basis of the decision of the investors, namely the expected return, the level of risk, and the relationship between return and risk. Investors can reduce risk by diversifying investments. The diversified investment will give optimum benefits in return for investments in a portfolio, if return in one portfolio correlated negatively. Markowitz (1952) has proven that the risk of investing is reduced combining some assets in a portfolio. Markowitz method indicates if the financial assets in a portfolio have a correlation of return of less than one, then the overall portfolio risk lowered.

According to the traditional methods of risk measurement, risk quantification is done by measuring the sensitivity by observing changes in one of the risk factors

and their impact on profit or loss of a portfolio. The measurement results are traditionally in the form of the amount of the loss is experienced, but these measurements do not give an idea of the probability potential number or loss that may be experienced. Besides measurement traditionally used on the assets individually, so each has assets of different risk measurement methods (Sartono, 2006). According to Sartono (2006), if each of these assets is combined into one portfolio, risk measurement becomes difficult because of the many methods that are used for each of the assets, even though the need for diversification in investing in one or more product groups so that the risk be reduced.

In 1994, JP Morgan developed the methods of VaR, which then its use is very widespread for measuring the various types of risk. According to the Best (1999), Value at Risk (VaR) is a method of measuring the risk statistically which estimate the maximum loss that may occur over a certain level of confidence in the portfolio. There are several models in the VaR measurement, i.e. Variance-Covariance models, Historical Simulation models, and Monte Carlo models. Previous research found that the VaR calculation by using the Variance-Covariance models produce undiversified VaR larger compared to a calculation model of Historical. In this research, will be used different objects and different analysis tools from previous research, also will add Monte Carlo Simulations as compared.

1.3 Research Questions

Based on the background of the issues above, there are a few questions about research against market risk analysis of investment portfolio of manufacturing companies in Indonesia, that is:

1. How to measure market risk using Value at Risk (VaR) Variance-Covariance models, Historical Simulation models and Monte Carlo models, of stock investment in Indonesian manufacturing companies?

2. How much the magnitude of the maximum potential loss or the value of the VaR to each type of stock investment based on the results of a calculation in the horizon of time 1 day ahead, 5-day, 10-day and 20-day for calculation based on each model?
3. How the validity of the model Variance-Covariance VaR, Historical Simulation models, and Monte Carlo models to estimate the level of maximum losses on investment risk incurred due to the stock market, manufacturing companies use back testing Kupiec Tests?

1.4 Research Objectives

As for the purpose of this research is conducted in accordance with the research questions above, the research objective are as follows:

1. To measure market risk using Value at Risk (VaR): Variance-Covariance models, Historical Simulation models, and Monte Carlo models of stock investment in manufacturing companies in Indonesia.
2. To know the magnitude of the maximum potential loss or the value of the VaR to each type of stock investment based on the results of a calculation in the horizon of time 1 day ahead, 5-day, 10-day and 20-day for calculation based on each model.
3. To find out the model Variance-Covariance VaR, Historical Simulation models, and Monte Carlo models to estimate the level of maximum losses on investment risk incurred due to the stock market, manufacturing companies use back testing Kupiec Tests.

1.5 Organization of the Study

This Study is organized into five chapters. Chapter 1 describes the introduction including background, problem identification, research objectives and

questions for this research, Chapter 2 provides literature review relates to this research. Chapter 3 presents the methodology of the study. Chapter 4 presents about result analysis and discussed. Chapter 5 provides conclusions and recommendations. The research is organized systematically, and it illustrated below in Figure 1.1:

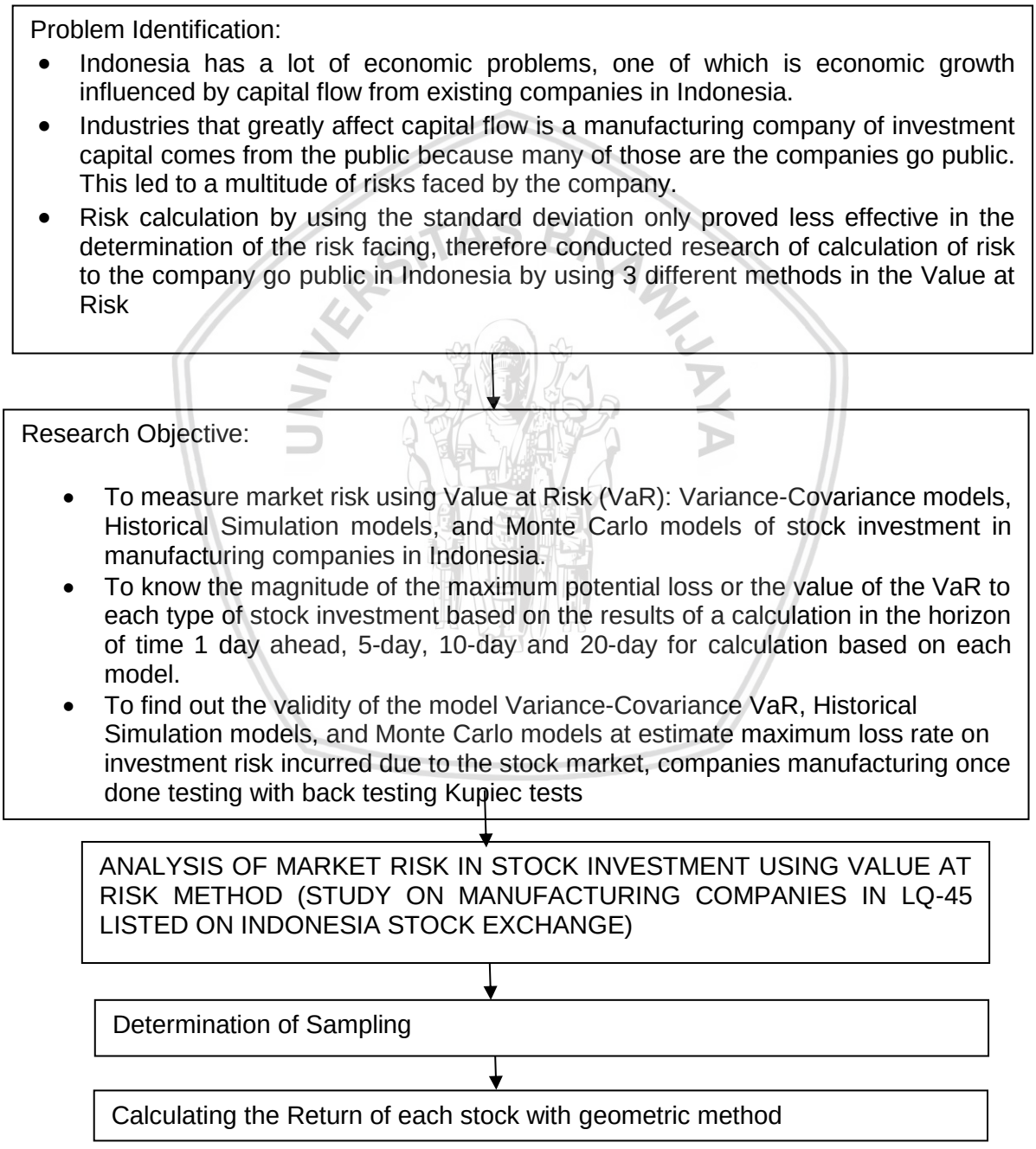


Figure 1. 1 Flow Chart of the Research (to be continued)

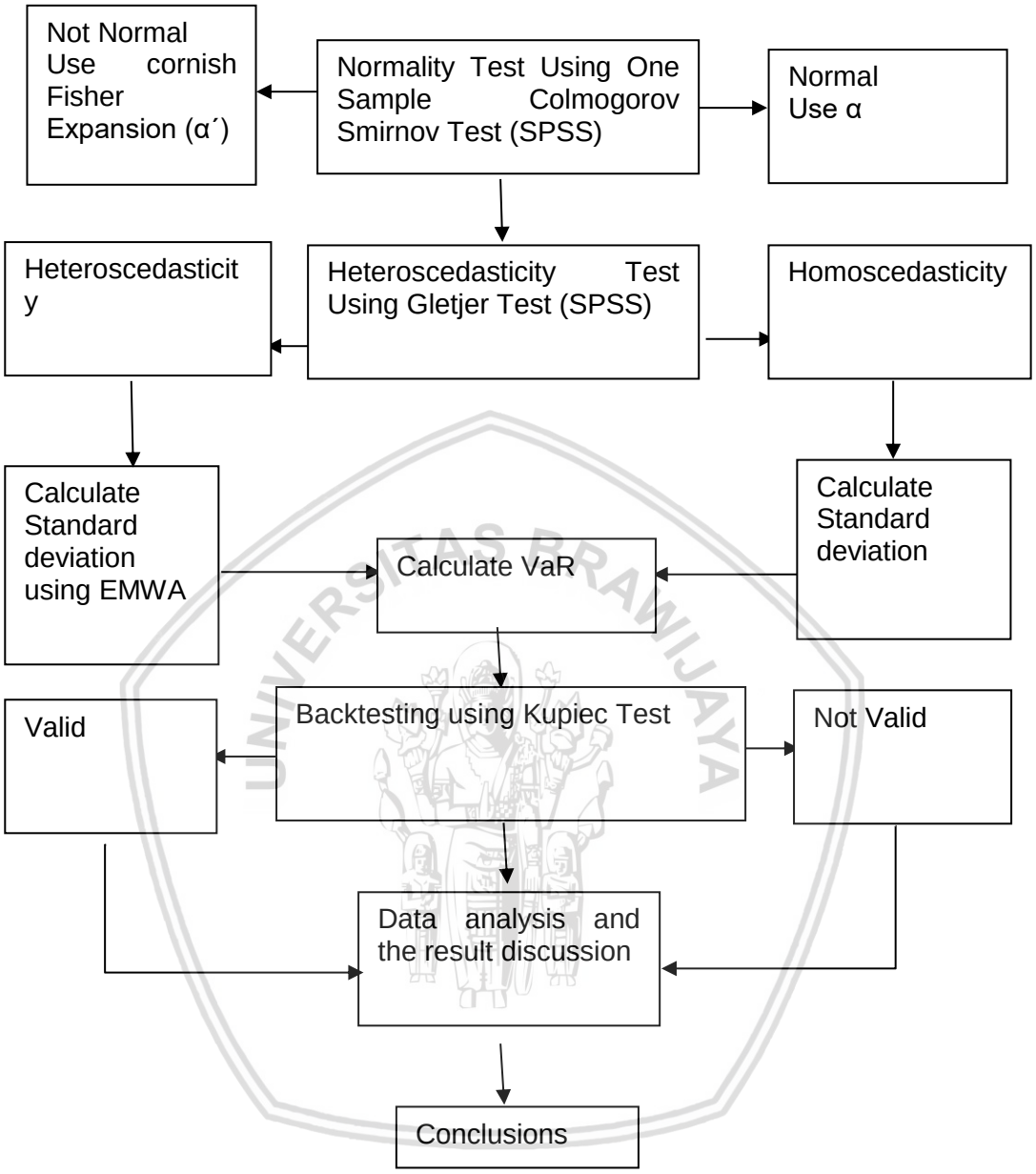


Figure 1.1 Flow Chart of the Research (continued)

2. LITERATURE REVIEW

2.1 Previous Research

This study is a continuation of previous studies. Before this study was implemented, there have been several researchers who conducted the testing against the measurements of potential loss (VaR) using the Variance-Covariance models and Historical Simulation model. In 2005, Oom Komariyah management master's degree Program Student of Indonesia University did a research about risk analysis of stock market investment towards Syariah at 10 Jakarta's Islamic Index (JII). In the study sample was taken 10 stock issuers representing 30 Islamic Syariah, which shares consistently traded in the period one on November 2002 up to December 2004, at the Jakarta Stock Exchange. The research methodology used is a methodology Value at Risk Variance-Covariance model and Historical Simulation model. The results of the study concluded that the second model is valid for measuring a maximum of 10 losses in shares of Syariah that are included on the Jakarta Islamic Index. To test the validity of the model is by looking at the level of failure (failure rate) with the Kupiec tests. In 2007, research by the title of the Value at Risk Method: An Application For Swedish National Pension Fund (AP1, AP2, AP3) By Using a Parametric Model is done by Blanka Grubjesic student of University of Skovde Sweden for master's degree project. The research was done in the calculation of the Daily Earning at Risk with the parametric model or Variance-Covariance against three assets portfolio of pension funds consisting of 20 types of shares traded on the Sweden Exchange, 20 foreign stocks and 10 bonds. The period examined starts on January 3 in 2005, until December 30 in 2005, with 95% of confidence level. The resulting conclusions stressed that the application of a simple parametric model approaches easily applied to Sweden's national pension fund investments (AP pension funds). Calculation of DEAR match with the structure of the Fund, owned by Sweden's national pension fund, meaning

that funds AP which have a high return, using DEAR calculation is also great. In 2009, Martin Gustafsson and Carolline Lundberg students the University of Gothenburg in their master's thesis perform the study titled An Empirical Evaluation of Value at Risk. In the thesis, are done testing a comparison between the three approaches in the VaR calculation are: Historical Simulation approach, Moving Average approach and GARCH approach toward 3 types of assets, namely commodity prices oil, Brent Oil, the most active stock on the Stockholm Stock Exchange OMXs 30 and T Bill Stockholm-3 months (3MSTB). The data used for research is data since January 1, 1987, and ended on September 30, 2008. The research methodology used is the measure of VaR with 3 different models, i.e. Historical Simulation approach, Moving Average approach and GARCH approach with a confidence level of 95% and 99%. Results of the study concluded that based on the results of conducting the Kupiec Tests, there is no one model that is valid for the three models tested with a confidence level of 95%, and 99%, nevertheless the non parametric approach shows the measurement results are better on a lower confidence level. Lastest research is from Nurharyanto, student of the Indonesia University about the analysis of the market risk of stock investment portfolio by value at risk method (case study on pension funds RST) in 2011 that has a research results that the calculation of risks using VaR Variance-Covariance which produce greater value compared with Historical models in the VaR calculation.

Based on the research it appears that the fourth model measurement VaR is reliable to measure market risk, however, this study has some differences with the previous studies, i.e.:

1. These studies use different objects from previous research, i.e. Research object using the manufacturing companies that are included in LQ-45 and are listed on the Indonesia stock exchange.

2. This research used the years of research that is different from the earlier period of February 2013 until January 2016.
3. This research uses the horizon of time 1 day ahead, 5 days, 10 days, and 20 days.
4. This research uses a third model that exists in the VaR calculation method, namely: Variance-Covariance models, Historical Simulation models, and Monte Carlo models.

2.2 Literature Review

2.2.1 Investment

2.2.1.1 Understanding Investments

Investment related to a wide range of activities that is able to invest some funds in the asset, such as land risk, gold, machinery, buildings, or investments in financial assets such as bank deposits, shares or bonds. According to Tandelilin (2010), investment is the commitment over a number of funds or other resources are done at this time, with the aim of acquiring a number of advantages in the future.

According to Nanga (2001) said that the investment can be defined as a net additional capital stock against which there is or could be also called capital accumulation. According to Schumpeter in Nanga (2001), investments can be divided into two, namely:

1. Investments are affected: investment was greatly influenced by changes in national income, sales volumes, profits and other companies.
2. Autonomous investment: investment is not affected by income level, but more determined by changes that are long term as there are new discoveries, technological developments and so on.

According to Jhingan (2000) suggested that the principal goals of the economic development are to build capital equipment in sufficient scale to increase productivity. In summary, the nature of economic development is the creation of capital "of social overhead" and the economy. This is possible only if the rate of capital formation in the country fast enough, that if part of the income or output the community invest in capital equipment. Investment in capital equipment not only increase production but also employment opportunities. The formation of capital produces progress to support the economies achievement scale and increasing production of broad specialization. The formation of capital gives the machines, tools, and supplies for the growing workforce. Direct investment can help developing countries address the problem of shortage of savings and a shortage of foreign currency and the currency in the country, then in terms of capital investment, both foreign and domestic will heighten the level of capital investment and further accelerate the rate of economic development (Sukirno, 1985).

Indirect investment, better known as portfolio investment consisting largely of mastery over a stock can be moved (which are issued or guaranteed by Governments of importing capital), on stocks or bonds by citizens of several other countries. Foreign direct investment has a benefit to introducing science, advanced technology that will encourage local companies to invest and encourage them to cooperate with foreign companies. But in fact, foreign companies are pushing local companies in two ways: directly helping local enterprises with manpower, money, and materials, as well as providing training and experience of personnel, while indirectly creating demand for additional services for foreign companies that are not able to resolve the problem of its economy on its own, and underdeveloped countries that need large amounts of additional capital. A portion of profits from the direct investment is generally implanted back into the development of modernization or construction related industries. The benefits of investment can be

grouped into a fruitful investment for the public such as investment in the field of infrastructure (roads, bridges, ports, markets and so on), investment in the field of nature conservation, investing in the field of waste processing, investment in technology, investments in the field of research and development, investment in the field of sports as well as investments in the fields of defense and security. The investment is beneficial for certain groups, such as investments in the field of religious building places of worship as well as the infrastructure there is in it. A fruitful investment for private and household such as investments that bring benefits for his personal or household in order to fulfill his wish in the future.

2.2.1.2 Investment Objective

The purpose of affecting the investment because of a necessity or a need where investment occurs automatically in accordance with the development needs of the living, as well as an investment, is an expectation of where these investments are included in investment due to the deliberate hope of benefit or profit. In addition, the investor should answer resources, aspects of the investment against expectations that he did to create the welfare society, aspects of risk: where everyone who did business investment always expect profits but in reality not everyone can do business profitable. In aspects of time is about where to invest the necessary patience to wait for the expected results. The aspect type is about where every investment made a shape and a different risk. While, according to Tandelilin (2010), to reach a decision in the effectiveness and efficiency of investment there is some purpose in investing, such as:

a. The creation of profit in a sustainable investment (continuity).
b. Got a welfare or a better life in the future.
c. Can help to reduce inflationary pressure.
d. The urge to save tax.

2.2.1.3 The Character Of The Investment

When viewed from the characteristics of the investment can be grouped into several groups as follows:

1. Public investment is the investment made by the State or the Government, to build infrastructure and facilities to meet the needs of the community. Investment with characteristics such as these (non profit motives) such as the construction of roads and bridges, schools, parks, markets, houses of worship, and means and other public infrastructure. Since this investment are done by the State, then the funds or the cost is done through the budget of the State expenditures and revenue budget area. This public investment produces value added in the form of goods and services, employment, rent, and interest, as well as business surplus without the other benefits of this public investment is pushing the economy and increase the mobility of civilization of a country community.
2. Private investment is the investment made by the private sector, with the purpose of the benefit in the form of profit. This type of investment is also known by the term investment with a profit motive, an investment with characteristics such as this can be done by private companies such as micro enterprises or households usually do not have a legal entity, as well as its business scale relatively small engaged in trade, industry or services. Small and medium enterprises, which was founded already has a legal foundation but has a characteristic with a scale ranging from small to medium-sized rooms, good views from the turnover, venture capital or labor, with small business industry, trade or services. State-owned Enterprises and Local Government involvement in the activities of the investment with a profit motive in this is based on three fundamental considerations, namely investments in strategic areas for the life of nation

and State. For example to State Defense tool, keeping the correct fulfillment of the basic needs of the community such as energy and food. The investment needed by the community, but there have been no private parties who enter or start a business because the risks are too great or the ability of the private sector is limited. Investment by the private sector in certain areas not yet adequately so that community needs are not met. Therefore, in order to improve services to the community as well as to encourage and maintain the stability of the economy State-owned Enterprises, and Local Government participated in the investment sector.

2.2.1.4 The influence of Investment against economic growth

Economic growth until now has not reaped the same point of view. That is because each expert gives a definition based on conditions that occur when the experts alive. But below are some experts give the definition of economic growth at the moment. That economic growth, namely as a process of rising per capita output in the long term. When in a State able to provide a growing number of economic goods to the population, it is grown in accordance with the capabilities of the technology and institutional adjustments necessary in order ideology economic growth as the increase in the long run (Jhingan, 1994). Economic growth as a process improvement of production of goods and services in the economic activities of the Community (Djoyohadikusumo in inna, 2000).

2.2.1.5 Investment and Stock Return

One of the goals of investors investing is to get a return. In the absence of the profit levels enjoyed from an investment, surely investors will not invest. Therefore, investments have the main purpose of getting a return. The understanding return according to Jogiyanto (2009), the return is the result of the investment. Meanwhile, according to Brigham and Houston (2006), return or the rate of return is the difference between the amounts receives and the amount

invested, divided by the amount invested. Dictionary of finance and investment terms States that the Return of the shares is an amount expressed as a percentage of earned on investment and common stock of the company for a certain period. The number was calculated by dividing the equitas common stock net worth at the beginning of the accounting period into net income after preferred stock dividends, but before the stock dividend that period. Return on capital tell ordinary shareholders how effectively their money in use. Compare the percentage of periods of walking with the percentage of the period of time will reveal trends and comparing it with industry composites reveals whether companies have survived well, against its competitors (Downes and Goodman, 1999). Of some of the definitions above it can be concluded that the return of stocks is rate of return in the form of rewards earned from the sale of shares. According to Jogiyanto (2009), as for other types of return on stock that is as follows:

1. Reality Return: is the return that has occurred are calculated based on historical data.
2. Expectation: return is the expected return will be acquired by investors in the future. Expected return is a very expected return for the near future, but its nature is uncertain. While the realization of the return or realized return is a refund that has happened and calculate based on historical data. Return is very important to measure the performance of the company as well as the basis for the determination of return and the risks in the future.

Systematically, the calculation of the return of shares is as follows:

$$\text{Return the stock} = \frac{Pt - Pt_{-1} + Dt}{Pt_{-1}} \quad \text{.....(2-1)}$$

Description:

Pt or P 1 = Price, i.e. the price for time t

Pt_{-1} or 0 P = Price, i.e. the price for previous time

Dt = periodic Dividends

The above calculations are often named as arithmetic calculations. Arithmetic methods return has weaknesses that can be misleading in making conclusions, especially if the distribution pattern of experiencing the percentage changes is very volatile. Therefore, this research uses geometric methods return using the following formula:

$$Rt = \ln \frac{Pt}{Pt_{-1}} \quad \text{.....(2-2)}$$

Description:

Pt or P 1 = Price, i.e. the price for time t

Pt_{-} or 0 P = Price, i.e. the price to an earlier time

According to Tandelilin (2010), the expected profits from the portfolio are the weighted average of the rate of profit expected of each individual assets that make up the portfolio. The presentation of the value of the portfolio is invested in each individual asset in the portfolio are known as weighting a portfolio. If the entire portfolio weights added, would amount to a total of 100% or 1, 0. This means that all funds have been invested with the expected portfolio return (Tandelilin, 2010).

2.2.2 Risk

2.2.2.1 Understanding The Risk

According to Bank Indonesia Regulations definition (PBI) No. 5/8/PBI/2003 on the implementation of the management, (2003) the risk is the potential for the occurrence of an event that may give rise to a loss. According to the risk management Certification Body (BSMR) and the Global Association of Risk Professionals (GARP) (2007), risk defined as the chance of the occurrence of the results (outcomes). According to Hanafi (2006), the risk is the magnitude of the

deviation between the rate of expected return (ER) and the actual rate of return. According to Arthur j. Keown (2000), the risk is the prospect of an outcome that is not preferred (operational as a standard deviation). Whereas, according to the Emmaett j. Vaughan and Curtis m. Elliott (1978), risk is defined as the:

a. The chance of loss
b. The possibility of loss
c. Uncertainty
d. The dispersion of actual from expected result
e. The probability of any outcome different from the one expected

Of the various definitions above, it concluded that the definition of risk is a condition arising due to the uncertainty with the completely unfortunate consequences that may occur.

2.2.2.2 Types Of Risks

According to Fabozzi (1999) in Marisa (2008), Risk distinguished into two, namely:

a. Systematic Risk: is the risk that cannot eliminate by doing diversification because fluctuations, these risks affected by the macro factors that can be influenced by the overall market. This risk caused by factors that simultaneously affect the stock price in market capital. When systematic risk appeared and the case then all kinds of stocks would affected so that the investment in one type of stock or less can reduce losses. Examples of systematic risk are a rise in inflation, a sharp rise in interest rates, and economic cycles. Systematic risk sometimes also referred to as market risk or risks cannot divided. This systematic risk is the risk that comes from economic conditions and market conditions generally cannot be in diversification.
b. Unsystematic Risk

This risk is the risk that removed by doing diversification, because this risk exists only in one particular industry or company. For example, the capital structure factor structure of assets, liquidity, and profitability.

While according to Tandelilin (2010), several types/risk factors may affect the magnitude of the risk of an investment. Those risks include:

1. Market risk is the risk of losses on the balance sheet positions and administrative account due to changes in its entirety over market conditions. Market risk includes:
   a. Equity price risk, i.e. risks posed by changes in the acquisition of profit because of price fluctuations and changing conditions/macro factors.
   b. Interest rate risk, i.e. the risk incurred due to the market's assessment of the supply and demand on the money market.
   c. Exchange rate risk, i.e. the risk due to changes in foreign currency exchange rates.
   d. Price risk, i.e. the risk that results from changes in commodity prices.
2. Financial risk is the risk arising from a third party that is not capable of fulfilling the contract.
3. Liquidity risk: Asset liquidity risk arises if a transaction cannot implemented on the existing market price because of the size of different positions with a number of lots to trade normally. Liquidity risk represents the inability to meet payment obligations, so force to undergo liquidation early and took the realization of losses.
4. Operational risk is the risk arising due to the factor of human error, system, and technology. This includes errors in governance risk, procedures and technical errors.
5. Legal risk is the risk arising in consequence of the performance of an activity, which does not meet the requirements of the law.

6. Reputation risk is the risk incurred due to loss of confidence in the company's reputation.
7. Country risk is the risk associated with the condition of a country's political situation. For investors who invest in companies overseas, the understanding of the political stability and the economy of the country is very important to avoid the country risk is high.
8. Political risk is a risk arising from actions taken by policy makers that significantly affect the operations of the organization.

2.2.2.3 Calculate The Risk Portfolio

According to Fabozzi (2007) the risk of the portfolio is not only determined by the weighted average of the risk of stocks that make up the portfolio, but also influenced by factors of correlation coefficients between the level of profit shares. While variance portfolio consisting of two or more assets depends not only on the variance of each of the assets but also on how close the relationship between the two assets. Variance calculation formula is as follows:

$Var(Rp)=\omega_i^2 var\ (R_i) + \omega_j^2\ var\ (R_j) + 2\ \omega_i\ \omega_j\ cov\ ((R_i, R_j)$.....(2-3)

Description:

cov (RiRj) = covariance between the return on assets i and j assets

So as to measure the variance portfolio n assets can use the following formula:

Variance porfolio = $\sum_i^n =1\ Wi^2\sigma^2_i + \sum_i^n =1\ \sum_j^n =1\ Wi\ Wj\ \rho ij$..... (2-4)

Description:

σ^2_i = variance return securities i

ρij = covariance between return securities i and j

Wi = weights or a portion of the funds invested in securities i

$\sum_i^n =1\ \sum_j^n =1$ the figures will be added simultaneously (on all pairs i and j which may be coupled).

Thus the portfolio variance equation shows the sum of the weighted variance and their respective assets plus the weighted covariance between assets. Statistical calculations with formula above can be proven that the more types of stocks that are included in the portfolio, will lead to a reduced risk of a portfolio. Assuming a return that exists in the portfolio is not correlated. But, in the real world it is very difficult to find that between return asset exists within the portfolio not correlated each other. So, theoretically the benefits of risk reduction will be retrieved by entering many or different types of stocks into portfolios. But, when we input a continuous stock into some type of portfolio, then the additional benefit (risk reduction) will not mean more, because it doesn't give the benefits again (it already reached the optimum point).

2.2.3 Value At Risk

2.2.3.1 Calculation and measurement VaR

According to Moorad (2006), essentially VaR is a measure of the volatility of the bank trading book. By making use of volatility estimate, a trader or senior manager can gain some idea of the risk exposure of the trading book. VaR is defined as follows: VaR is measured risk. It is the maximum loss which can occur with X% confidence over a holding period of t days. Value at risk methodologies can calculate the maximum potential loss that may occur from one portfolio in a certain time and with a specified confidence level. The value of VaR is the magnitudes of expected risk or loss measured in the absolute value of the currency. In addition, it used as information and evaluation. The value of VaR can also be used as a tool to do predictive estimation of risk against the possibility that may occur. The possibility of a decline in stock prices on the financial markets (market risk) will lead to the possibility of a decline in the value of assets. Recommendations for calculating market risk published by G-30 best practice report (Jorion, 2007). It is recommend performing the measurement of market risk

on a daily basis that is consistent with the approach of the VaR.

On the principle of risk, have two components, namely exposure and uncertainty. Risk measurements calculate by applying the existing measurements into risks using risk metric. The term risk metric became popular after JP Morgan (1994) posited in a variety of research results, which are known as Risk Metric associated with the measurement of risk. One of the results of research, which is quite widely used, is the use of holding one period day with a 95% confidence level in calculating VaR. Besides, the determination of the value of the decay factor in applying the method. In calculating the risk of the portfolio there are a few things into consideration because the characteristic of return volatility depends on:

a. Variance of each asset
b. Covariance between the asset
c. composition of the assets in the portfolio

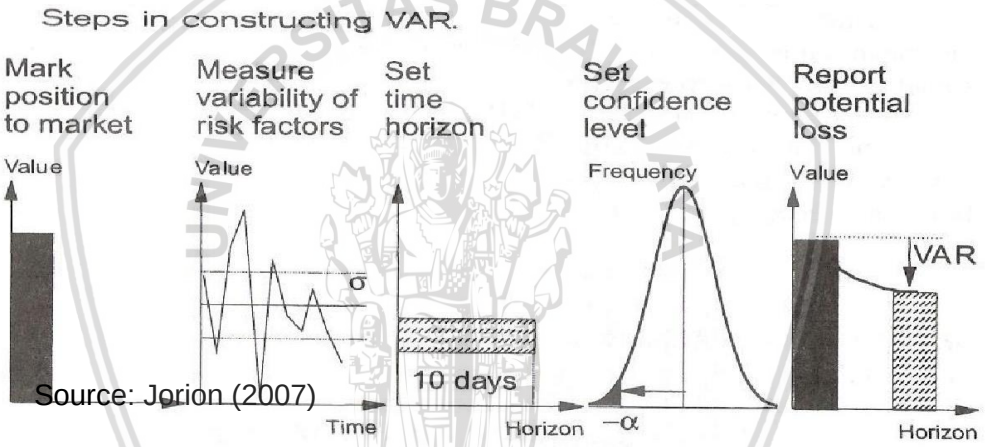
In the VaR measurement, there are stock specific requirements and necessary steps. Jorion (2007) States that the VaR is the number of maximum predicted losses will occur in the time (horizon) with a certain level of trust. Therefore, the calculation of quantitative factors needed to calculate the value of VaR on a specified time and at a certain level of trust that has been established before. Calculation Steps of the VaR that is needed to set the value of the investment risk is as follows:

1. Mark-to-Market value of the portfolio in accordance with the prevailing market value at a specific time.
2. Measuring risk factors of variability in units of percent per unit of time. Suppose the value of the variability of 15% per year.
3. Set the time horizon or commonly referred to, as the holding period specified in this step, the level of investment risk in accordance with risk measurement period will be assessed. Suppose that a 10-day

trading (trading).

4. Specify the desired level of confidence in accordance with the plan of the research business that will know risks, for example on a confidence level of 95%.
5. Report the value of the maximum potential losses and followed with an easy-to-understand analysis of the results for the implementation of practical investment solutions as.

Jorion (2007) provide systematic calculation of the value of VaR, in brief looks at figure 2.1 below:



Source: Jorion (2007)

Figure 2.1 Steps to calculate the value

According to Moorad (2006), the calculation of a VaR estimate follows four steps:

1. Determine the time horizon over which the firm wishes to estimate a potential loss. This horizon is set by the user. For the company trade of stock occured often, so it is important to the company to decide short time period horizon.
2. Select the degree of certainty required, which is the confidence level that applies to the VaR estimate.
3. Create a probability distribution of likely return for the instrument or portfolio under consideration. The easiest to understand is a distribution of recent

historical return.

4. Calculate the VaR estimate. This calculation is done by observing the loss amount associated with that area beneath the normal curve at the critical confidence interval value that is statistically associated with the probability chosen for VaR estimate.

To measure the value of the VaR approach there are three: Variance-Covariance method, Historical Simulation, and Monte Carlo Simulation. Brief description of each of these methods is as follows:

1. Variance-Covariance method: a method of Variance-Covariance approach to calculating VaR value based on the value of the asset return volatility, asset values and to the portfolio needs to be taken into account the correlation between single assets. This method will give accurate VaR value, assuming a return to normal distributed generated and ignore the extreme events. According to Moorad (2006), Variance-covariance methode as known as correlation method assumes the return on risk factors are normally distributed, the correlation between risk factors are constant and the delta (price sensitivity changes in risk factor) of each portfolio constituent is constant. Historical data on investment returns are therefore required. According to Jorion (2007), the VaR for single assets is calculated using the following formula:

$$VaR = \alpha.\sigma.P \quad \text{.....(2-5)}$$

Description:

α = value Z normal distribution, standard based on level of confidence.

σ = volatility of asset value

P = market value of an asset, some authors who write P = Vo

Formula calculated by a factor-holding period then the equation into the following formula:

$VaR = \alpha.\sigma.P.\sqrt{t}$ .....(2-6)

Description:

α = value Z normal distribution, standard based on the level of confidence.

σ = volatility of asset value

t = the holding period, or time horizon, or the time aggregation

P = market value of an asset, some authors who write P = Vo

Values Z on normal distribution depends on the level of trust is established, the greater the degree of confidence and the longer time periods are used, then it will generate the value of VaR that is increasingly high. The level of trust or confidence level was a probability value that reflects the degree of confidence that the value of the loss/loss will not exceed the value of var. For Z in the standard normal distribution is calculated with the following equation:

$$Z = \frac{X - \mu}{\sigma} \quad \text{.....(2-7)}$$

Description:

x = return

μ = mean of return

σ = Deviation Standard of Return

For VaR calculations on the data are not normally distributed, then used α '. α ' is the result of a correction of the value of α with taking into account the value of the skewness of the distribution (ζ). Formula to calculate α ' can use the approach of Cornish-Fisher Expansion (Jorion, 2007):

$$\alpha' = \alpha - \left[\frac{1}{6} \{(\alpha^2 - 1) \zeta \} \right] \quad \text{.....(2-8)}$$

Description:

α' = the value of Z that has been corrected

α = the initial value of Z with a certain level of trust

ζ = skewness Value of return distribution

The holding period is the length of time an investment is held. In the VaR, the holding period also has the meaning of a time period to the fore in a matter of days the unit value of VaR is calculated. Thus the longer the holding period, then the greater the value of VaR. Determination of the election holding period are very subjective depending on the type of portfolio that is mastered, the character of the implemented investments and needs to be achieved in conducting the analysis. Ideally the holding period, associated with the need to liquidate a particular portfolio. (Jorion, 2007).

2. The method of Historical Simulation: According to Moorad (2006), historical simulations method for VaR is the simplest and avoid some of the pitfalls of the correlation method. This method calculates potential losses using actual historical returns in the risk factors and so captures the non-normal distribution of the risk factor returns. According to Jorion (2007), the approach of the method of historical simulation VaR value calculation model is determined by the value of the past (historical) on the return of assets to be produced. If known or owned a data base of past historical value that more and more, then the results of the calculation of the value of VaR that is produced will be the better. In the model of Historical Simulation is a model that can be directly implemented to calculate his major var. this Model does not require assumptions about the normality of data time series. How used is relatively simple and easy to implement, because the data return sorted in a particular order which is divided in percentile. Then, determine the change in the price volatility in accordance with a specified degree of confidence intervals. Formulas that can be used in calculating VaR are as follows:

VaR = Vo x Percentile 5% x √t .....(2-9)

Description:

Var = value of the magnitude of the maximum potential loss happened

Vo = exposure

Percentile value 5% = Data to return-1% of the historical data

√ t = set time Horizon

The advantages of the method of historical simulation (Jorion, 2007) includes return values at a time when market conditions are having a disorder or not normal, like it was going to crash. This kind of condition will reflect in the description of the historical return data. In this method also not require calculate correlation and standard deviation of an asset, because in standard deviation already contained in the historical return data. The weakness of this method is that for the purposes of analysis and decision-making via calculation of VaR in need of historical return data with a long span of time, so has the potential not relevant anymore with the current market conditions.

3. Monte Carlo Method: According to Aparna (2014), in this simulation, price paths must be constructed by using appropriate simulation techniques for each stochastic distributions where necessary. The non-linear contracts, such as derivatives contracts have to be priced to determine their value in the future for each scenario of underlying asset value. According to Moorad (2006), this simulation is more flexible than the previous two. As with historical simulation, this method allows the risk managers to use actual historical distributions for risk factor returns rather than having assumed normal returns. It uses a large number of randomly generated simulations are fun forward in time using volatitilty and correlation estimates chosen by the risk manager.

2.3 Testing of The Model

2.3.1 Normality Test

This testing aims to test residual variables which, have normal distributions or not. One of the easiest ways to see residual normality is to look at the histogram graph comparing between data distribution with the observation that approximates a normal distribution. A more reliable method is to compares the cumulative distribution with a normal distribution. Normal distribution will form a straight line diagonally, and plotting residual data will compare with diagonal lines. If the data is normal, then the line that describes the actual data will follow the diagonal line (Ghozali, 2006). The basis of decision-making for testing normality is:

- If the data spread around the diagonal line and follow the direction of a diagonal line or graphic histogram shows a normal distribution, then the regression models satisfy the assumption of normality.
- If the data spread far from the diagonal or not following the direction of the diagonal line of the graph or histogram does not show a normal distribution, then the regression model does not satisfy the assumption of normality.

According to Ghozali (2006) mention that tests the normality of using graphs can be wrong because visually it can look normal but not by way of statistics, therefore, in addition to using normal probability plot, this research also use Colmogorov Smirnov test Goodness of Fit Test. If the value of significant (asym Sig 2. Tailed) more than 0.05, then the data is normal.

2.3.2 Heteroscedasticity Test

This Test is carried out to analyze there is inequality of variance residual observations to other observations or not. We can see it from the graph plot between the prediction variable (ZPRED) and residual (SRESID). The basic analysis used is: If there is a particular pattern, such as the points that there are

certain patterns or irregular form then indicates have occurred Heteroscedasticity. Conversely, when the dots are there spread below and above the zero on the y-axis, then it is not happening. In addition, the test can also be done with the Heteroscedasticity test gletjer that is seeing the value of t-statistics on the results. If the value of the Significant-t greater than 0.05 it is not happening Heteroscedasticity (Ghozali, 2006).

2.3.3 Volatility Test

Volatility and correlation are always assume constant in nature. In fact, the volatility and correlation on the financial data are not constant, and often just shows the manifest irregularity. It is very common in economic, financial transactions in a period of low volatility, high volatility some time later, often referred to as volatility clustering. According to Fabozzi (2007), one of the OLS assumptions that must be met in order for the Best Unbiased Linear estimator are Estimation (BLUE) is Var (ui) = σ^2. Volatility is changed in asset values in a specific time. On the data are homoscedasticity, to estimate the volatility can be used in normal standard deviation approach, while on the data heteroscedasticity have a variance is not constant to time. Therefore, heteroscedasticity data has violated the assumption of OLS. Several tests can be used to determine that whether data are homoscedasticity or heteroscedasticity, one of them is a test of White. Whereas to do assessments on data that is heteroscedasticity there are, two approaches that can be used namely EWMA and ARCH/GARCH.

EWMA volatility test developed by JP Morgan (1994) is primarily a step estimation against volatility in the future by giving weights over the current observation data compared to the previous period data. This approach assumes that the projections will come (the next day) are influenced by the actual data today and historical data of the past. EWMA volatility test can be done by specifying the value of the lambda (ƛ) or decay factor optimum. The value of lambda is said to

be optimum if the smallest RMSE value produces. Decay factor is weighted based on time weighting (Terry & Keith, 1996). ƛ parameter (decay factor) show the scale of weights over the latest data observation with previous data with the value 0 < ƛ < 1. The higher the ƛ increasingly will be even greater weights charged on past data so that the data time series the more smooth. When ƛ approaching 1, then increasingly volatility persistence following market shock (Alexander, 2009). EWMA Variance can be calculated by using the formula (Best, 1999) as follows:

$$\sigma^2 = (1- \lambda) \sum_t^n =1 \lambda^{(t-1)} (R_t - \hat{R})^2$$

.....

(2-10)

Description:

ƛ = decay factor

t = time

R_t = return in period t

$\hat{R}$ = mean of return

The value specified with the Root Means ƛ Squared Error (RMSE), where specified ƛ such that the error between a random variable with a value of volatility at the same time has the smallest value. The value used is the value ƛ. ƛ value is the Root Mean Square Error (RMSE) of the smallest. The error is the difference between the actual values of the variance with the projected variance. The actual variance can be calculated with the following equation formula:

Actual Variance = R_t^2 .....(2-11)

While the projected variance can be calculated with the following equation formula:

Projected Variance =$\lambda^{(t-1)} (R_t - \hat{R})^2$ .....(2-12)

There are two parts of the above equation, the first showing the persistency of volatility, when volatility is higher yesterday then today's volatility will also remain

high. While the second part shows the intensity of the reaction against the volatility of market conditions. The smaller the ƛ, it will increase reactive against the volatility of market information on return day yesterday.

Test of ARCH/GARCH considers a variance may be there is a link between the value of the variance with the value variance is now called conditionals variance. If, the variance is considered independent or stand-alone, then the condition is called with unconditional variance (Widarjono. 2007). On data that had characterized heteroscedasticity where variance value will vary from time to time.

Change the value of the variance over time can be measured using the ARCH/GARCH (Auto Regressive Auto generalized Heteroscedasticity Conditionals/Conditionals Heteroscedasticity). Measurement with ARCH GARCH it always assumes that the value of the variance is now influenced by the value of the variance or variance with conditionals.

2.3.4 Back Testing VaR

Back testing is performed to measure the validity of models used in the process of measurement and risk management. Basically, back testing is to extent, which the models used that can capture the actual level of risk that occurs. The parameters used are the historical output of the models used and the output of the actual activities of a financial instrument in back testing can be defined as an attempt to compare the VaR day t_{-1}. It will use the actual values of profit and loss yesterday to the t (the difference between the value of the trading day to day t with t_{-1}). The goal was to see how valid VaR is obtained. Irregularities happen if actual damages exceed the VaR 1 day in advance. For example, the price of a bond decreased by 1 billion today. Meanwhile on the calculation of VaR days earlier predicted that the maximum loss that may be happening is of 1.5 Billion, then it is said that the predicted VaR are qualified, since it has succeeded in predicting losses with a high level of accuracy. However, if that is happening is the opposite,

then the calculated VaR model can be said failed to predict the worst possibility that would happen or has happened deviations, and the model will reject.

Limit deviations must be specified, because if a model is not valid after a discrepancy was found, then it can be said that the model is too conservative in calculating VaR. As well if, the number of irregularities that occurred very much, then the model is less able to perform estimation in measuring var. If a value changes to true assets that are distribute normally, then the maximum limit of the tolerable exception is:

$(1 – \alpha) \times N$.....(2-13)

Description:

α= the confidence interval

N= total observation days

Binomial distribution approaches the normal distribution with a standard can be used as a tool to determine the amount of deviation allowed in order that an acceptable model in measuring VaR. determination of limit in accordance with specified confidence interval measurement in VaR

Back Testing is a process to test the validity of the VaR model used is already accurate or not. Back Testing or commonly called reality check is very important from risk management to test the feasibility of the VaR model used. According to Jorion (2007), VaR model is only useful when it can predict risks well. A move made in back testing is to compare actual losses loss with losses predicted by the model test of the validity of the VaR. This is done by comparing the Kupiec Tests each VaR, which has been calculated by the actual profit or loss then, noted the failure rate. Jorion (2007) based on the mentioned source Kupiec (1995), table 2.1 below gives the limitation not to reject the model after back testing.

Table 2.1 Failure Model Backtesting

Probability Level P	VAR Confidence Level	Nonrejection Region For Number of Failures N		
		T=255 Days	T=510 Days	T= 1000 Days
0.01	99%	N < 7	1 < N < 11	4 < N < 17
0.025	97.50%	2 < N < 21	6 < N < 21	15 < N < 36
0.05	95%	6 < N < 21	16 < N < 36	59 < N < 65
0.075	92,50%	11 < N < 28	27 < N < 51	60 < N < 92
0.01	90%	16 < N < 36	36 < N < 65	81< N < 120

Source: Jorion (2007)

On this research, Back Testing will use the trust level Kupiec/confidence level 95% and using 252 data transactions during 1 year. If failure rate (N) numbering among 6<N<21 then, the VaR model is considered valid for measuring potential losses. However, if N $\leq$ 6 then the model was considered too conservative, whereas if N $\geq$ 21 then the model was considered too moderate (Jorion, 2007). To determine the validity of a test model can use the VaR log likelihood ratio (Jorion, 2007) with the following equation:

$$LR= -2\ln[(1-p)^{T-N}.p] + 2\ln\{[1-(N/T)]^{(T-N)}(N/T)^{N}\} \quad (2\text{-}14)$$

According to Kupiec, testing that just based on failure between the time the test is inefficient, because it ignoring information total failure that happened since the start of observations.

3. METHODOLOGY

3.1 Research Type

This research uses quantitative research type. Quantitative research is a type of research that focuses on testing using measured data. Quantitative research methods were used to examine the population or a particular sample; sampling techniques are generally done at random, using data collection research, data analysis quantitative in nature with the aim to test (Sugiyono, 2010:13). The approach used in this research is the explanative research. The purpose of the explanative research is connecting different patterns, also has an affinity and generates causal patterns.

3.2 Data Collection

3.2.1 Type and Source of the Data

Types of data used in this research are quantitative to calculate return and VaR. The source of the data used in this research is a secondary data source. Secondary data is data the research obtained indirectly through an intermediary media (Indriantoro and Supomo, 2009:147). Secondary data is generally in the form of evidence, records, historical reports that have been arranged in the archive (data) are published and unpublished. In this research, the secondary data used to originate in the financial statements and the annual report of the manufacturing companies in Indonesia.

3.2.2 Sampling

The population of the region is a generalization which consists of objects and subjects that have certain qualities and characteristics set by the researchers to learn and then drawn the conclusion (Sugiono, 2007:115). In this study, population used is companies in Indonesia enrolled in LQ-45.

According to Sugiono (2009:116), sample is part of a number of characteristics shared by the population. The sample is representative of the population partially or researched. Sampling technique in the quantitative research is the nonprobability sampling (withdrawal of samples are not random). According to Sugiono (2009:121), nonprobability sampling is a sampling technique does not provide the same opportunities or opportunity for any of the elements or members selected into the sample. Part of nonprobability sampling purposive sampling was used. Purposive sampling is a technique of determining the sample by means of certain considerations (Sugiono, 2009:122). Sampling was conducted by taking samples from a population based on certain criteria. The criteria used based on specific reasoning or rations. This study the criteria used is with certain considerations, i.e.:

1. Companies in Indonesia are enrolled in LQ-45
2. Companies in Indonesia are listed on the Indonesia stock exchange and present financial reports and a complete ratio with variables will be examined based on the sources used.
3. Companies in Indonesia are listed on the Indonesia stock exchange IPO before doing years of research (before 2013)
4. Companies with stocks that active and liquid that meets the criteria 45 stocks most active within 30 days of the last stock exchange or active for the last 3 years.
5. Companies have a market capitalization of over Rp 1 trillion, so that it can represent the values of daily market trading, even capable of being index mover in the formation of the JCI in the Indonesia stock exchange
6. Companies that during the period of research become a member remains on the LQ-45 (not coming-out)

7. Manufacturing companies in Indonesia who published a financial report in full and detailed.

The following is a table of sample classification research based on the above criteria:

Table 3.1 Sample Classification

No.	Criteria	Total Sample
1.	Companies in Indonesia are enrolled in LQ-45	45 Companies
2.	Companies in Indonesia are listed on the Indonesia stock exchange and present financial reports and a complete ratio with variables will be examined based on the sources used.	45 Companies
3.	Companies in Indonesia are listed on the Indonesia stock exchange IPO before doing years of research (before 2013)	45 Companies
4.	Companies with stocks that active and liquid that meets the criteria 45 stocks most active within 30 days of the last stock exchange or active for the last 3 years	45 Companies
5.	Companies have market capitalization of over Rp 1 trillion, so that it can represent the values of daily market trading, even capable of being index mover in the formation of the JCI in the Indonesia stock exchange	45 Companies
6.	Companies that during the period of research become a member remains on the LQ-45 (not coming-out)	30 Companies
7.	Manufacturing companies in Indonesia who published financial report in full and detailed	9 Companies

Source: Data processed, appendix 1

Based on the classification of the samples above the list of company names that can be used in this research are:

Table 3.2 Sample List

No	Code	Company Name
1	ASII	Astra International Tbk.
2	CPIN	Charoen Pokphand Indonesia Tbk
3	GGRM	Gudang Garam Tbk.
4	ICBP	Indofood CBP Sukses Makmur Tbk.
5	INDF	Indofood Sukses Makmur Tbk.
6	INTP	Indocement Tunggal Prakasa Tbk.
7	KLBF	Kalbe Farma Tbk.
8	SMGR	Semen Indonesia (Persero) Tbk.
9	UNVR	Unilever Indonesia Tbk.

Source: Data processed, appendix 1

3.3 Research methodology

Translation of research methodology in measuring the risk of stock market investment policy on Manufacturing companies by using the model of Value at Risk (VaR) generally fall into the following three stages:

3.3.1 The Stage Of Data Collection

1. Specify the type and number of shares that will use as the basis for research. The amount of data selected stocks as the investment portfolio as much as 9 stocks
2. Daily data collection nine selected stocks since 1 February 2013 up to 28 February 2016. The data collected for each stock as many as 780 daily share price data.

3.3.2 Stage of processing and counting

1. Calculate expected return by using a geometric return and arithmetic return calculation. Mathematical formulas for arithmetic return to calculate the return on the discrete nature of the data can be expressed in equations (Jorion, 2007) as follows:

Return the stock = $\frac{Pt - Pt_{-1} + Dt}{Pt_{-1}}$ .....(2-1)

Description:

Pt or P 1 = Price, i.e. the price for time t

Pt_{-1} or 0 P = Price, i.e. the price for previous time

Dt = arithmetic return Methods periodic Dividends have weaknesses that can be misleading in making conclusions, especially if the distribution pattern of experiencing the percentage changes are very volatile. Therefore, in this calculation, calculating the return of each stock using geometric approach to return by using the natural logarithm function as expressed by the following formula:

Rt = ln $\frac{Pt}{Pt_{-1}}$.....(2-2)

The expected benefits of the portfolio are the weighted average of the rate of profit expected of each individual assets that make up the portfolio. The presentation of the value of the portfolio is invested in each individual asset in the portfolio are known as weighting a portfolio. If the entire portfolio weights added, would amount to a total of 100% or 1.0. This means that all funds have been invested with the expected portfolio return (Tandelilin, 2010). Calculation of return in this research will done with Excel software tools.

2. Calculate return portfolio using the formula (Jorion, 2007) as follows:

$$Rp,t = \sum_{i}^{N} -1 \; Wi \; Ri,t \quad \text{.....(3-1)}$$

Description:

Rp,t = portfolio return period t,

Wi = weight of assets to-i

Ri, t = return assets to-i, on the period to-t

3. Measure the variance of portfolio assets can use the formula n (Jorion, 2007)

as follows:

Variance portfolio = $\sum_i^n =1\ Wi^2\sigma^2_i + \sum_i^n =1\ \sum_j^n =1\ Wi\ Wj\ \rho ij$.....(2-4)

Description:

σ^2_i = variance return securities i

ρij = covariance between return securities i and j

Wi = weights or a portion of the funds invested in securities i

$\sum_i^n =1\ \sum_j^n =1$ the figures will be added simultaneously (on all pairs i and j which may be coupled)

4. Do normality data test. This testing aims to test residual that variables have normal distributions or not. One of the easiest ways to see residual normality is to look at the histogram graph comparing between data distribution with the observation that approximates a normal distribution. Normal distribution will form a straight line diagonally, and plotting residual data will be compared with diagonal lines. If the residual normal distribution of the data, then the line that describes the actual data will follow the diagonal line (Ghozali: 2006). Therefore, in addition to using normal probability plot, this research also use Colmogorov Smirnov test Goodness of Fit Test. If the value of significant (asym Sig 2. Tailed) more than 0.05, then the data is normal If the data concluded that not normal/skewed the value calculated with the skewness Z-corrections are calculated using the Cornish-Fisher Expansion (α '), with the following formula:

$$\alpha' = \alpha - \left[\frac{1}{6} \{(\alpha^2-1)\ \zeta \} \right] \quad \text{.....(2-8)}$$

5. Do a homoscedasticity or Heteroscedasticity test. In this research, it will use test gletjer that is seeing the value of t-statistics on the results. If the value of the significant-t greater than 0.05 it is not happening Heteroscedasticity If the

characteristics of the data homoscedasticity then calculate the volatility is done with a standard deviation of normal. If the characteristics of the data heteroscedasticity then calculate volatility using the EWMA with formula (Jorion, 2007) as follows:

$$\sigma^2 = (1- \lambda) \sum_t^n =1 \lambda^{(t-1)} (R_t - \hat{R})^2 \text{.....(2-10)}$$

6. Determine the Variance of each stock and the portfolio Variance Covariance model. In determining, the variance of a portfolio is not only affected by the variance of each stock but also influenced by the correlation between stocks. The steps that must be taken in determining the portfolio variance can be done with the variance covariance matrix is as follows:
    a. Create a matrix of volatility (V), which contains the standard deviation or volatility of each stock.
    b. Creating the correlation matrix (C), which measures the correlation between two stocks in a portfolio of stocks.
    c. Create a matrix (C x V), i.e. the multiplication between volatility (V) one share with correlation (C) two shares.
    d. Create a matrix (Vx C x V), i.e. the multiplication matrix variance between the results with other stock volatility to find the variance covariance between stocks.
7. Specifically for doing calculations with model VaR Historical Simulation implemented in the following way:
    a. Data return all shares in-sort of the biggest loss of the value of start up to the value of the largest gains.
    b. Specify the value his percentile to determine the basis of calculation of VaR, in this case determined by 5%.
8. Calculate the magnitude of the value of the maximum loss (VaR) for each stock and portfolio VaR model Variance Covariance model Historical

Simulation, and Monte Carlo Simulation.

3.3.3 Testing of the validity

The data used to calculate the value of VaR is the value of return, therefore, the results of the decision depend on the possibilities and statistical theory. A possibility of giving the size of his little big trust will be the decision makers within the scope of a given result. Before the deployment of the data return to measure the validity of testing needs to be done VaR data, which includes distribution patterns, testing normality, heteroscedasticity, and volatility was followed by back testing. To determine the validity of the model then to do Back Testing with the Kupiec Tests use data for 252 days or one year of data. On the research of Back Testing done with a Test where the trust level Kupiec/convidence level used is 95% done with 252 data transactions during 1 year. If failure rate (N) numbering among $6<N<21$ then the VaR model is considered valid for measuring potential losses. But if $N \leq 6$ then the model was considered too conservative, whereas if $N \geq 21$ then the model was considered too moderate (Jorion, 2007)

4. RESULT AND DISCUSSION

4.1 An Overview of the Company

4.1.1 Astra International Tbk (ASII)

Astra International Tbk (ASII) was founded on February 20, 1957, under the name of PT Astra International, Incorporated. Astra located on Raya Motor Style Street 8, Sunter II, 14330 Indonesia – Jakarta. The largest shareholders of Astra International Tbk is the Jardine Cycle & Carriage Ltd (50.11%), a company incorporated in Singapore. Jardine Cycle & Carriage Ltd is the son of entities of Jardine Matheson Holdings Ltd., a company incorporated in Bermuda.

Based on the articles of the company, ASII engaged in general trading, industry, mining, transport, agriculture, development, and consulting services. The scope of the main activities of Astra with his efforts include assembling and channeling cars (Toyota, Daihatsu, Izusu, UD Trucks, Peugeot and BMW), motorcycles (Honda) the following spare parts, sales and rental of heavy equipment, mining and plantation development, related services, financial services, infrastructure and information technology.

Astra has a subsidiary, which is also listed on the Indonesia stock exchange (idx), among other things: Astra Agro Lestari Tbk (AALI), Astra Graphia Tbk (ASGR), Astra Otoparts Tbk (AUTO) and United Tractors Tbk (UNTR). In addition, Astra also has one-associated companies which are also recorded in the BEI, namely Bank Permata Tbk (BNLI). In 1990, ASII gain effective statement to BAPEPAM-LK to perform initial public offering (IPO) ASII has 30,000,000 shares with nominal Rp 1,000 per share, with a price quote Prime Rp 14,850 per share. The stocks listed on the Indonesia stock exchange (idx) on 04 April 1990.

4.1.2 Charoen Pokphand Indonesia Tbk (CPIN)

Charoen Pokphand Indonesia Tbk (CPIN) was founded January 13, 1972 in order for Foreign Investment and operates commercially beginning in 1972. The head office is at JL. CPIN Ancol VIII No. 1, Jakarta, with branches in Sidoarjo, Medan, Balaraja, Tangerang, Serang, Lampung, Semarang, Surabaya, Denpasar, Makassar, Salahtiga and Cirebon. Parent business Agormina Pokphand is PT Central, whereas the last attempt at holding Pokphand is a Grand Tribute Corporation. Shareholders who have 5% or more of the shares of Charoen Pokphand Indonesia Tbk is PT Central Agromina (55.53%).

Based on the company's articles of Association, the scope of activities of the CPIN mainly include the food industry, livestock breeding and farming of chickens ras and of processing industry, food processing, preservation of meat chickens. It also has preservation of cows including cold storage units, sells forage, food, chicken and beef, the materials of animal origin in the territory of Indonesia, as well as abroad.

Brands owned Pokphand, among others: animal feed (HI-Pro, HI-Pro-Vite, Star, Bonavite, Royal, Turbo feeds, and Feed Tiji) and product processing of chicken meat (Golden Fiesta, Fiesta, Champ, and Okay). In 1991, gaining effective statement from CPIN BAPEPAM-LK to perform initial public offering (IPO) CPIN to society as much as 2,500,000 with a nominal value of Rp 1,000 per share to Rp 5,100 bidding with the price per share. The stocks listed on the Indonesia stock exchange (idx) on March 18, 1991.

4.1.3 Gudang Garam Tbk (GGRM)

Gudang Garam is the producer of cigarettes, which is one of the main hubs of the spice trade in the world. According to Kompas Health (2012), with a total population of nearly 250 million people, Indonesia is a large consumer market and

diverse with a significant percentage of adult smokers, estimated 57% of men in Indonesia are smokers. Based on Nielsen market research, at the end of 2014 Gudang Garam has a market share of smoking in the country around 21.9% with products that are already widely known by people in the entire country.

Gudang Garam provides employment for around 36.400 people involved in the production, marketing, and distribution by the end of 2014. The welfare of its employees, of the work safety standards and provision of health facilities to leadership training, management, administration, and engineering skills, organized both inside and outside the company. Gudang Garam indirectly also supports job creation, for approximately four million in tobacco and clove plantation sector which provides the raw material for the company, as well as distribution sectors such as retailers and hawkers are scattered throughout Indonesia. Cigarette industry itself, including the company, is the main source of income tax for the State.

Gudang Garam cigarettes production facilities have two locations. First, in the town of Kediri, with a population of 249 thousand, which is a regional trade center, while the location of the Head Office of the company. The second production facility is located 130 kilometers from the city, on the Gempol. Because of two production facilities, the company is able to meet the demand for cigarettes. The company's shares are listed on the Indonesia stock exchange (idx) with code GGRM traded on a price range Rp 39,700 to Rp. 64,250 per shares through the year 2014. The amount of paid-in capital and placed unchanged in 2014, and the company shares dividends worth Rp 800 per share of profit by 2013 according to the decision of the Annual General meeting of shareholders.

4.1.4 Indofood CBP Sukses Makmur Tbk (ICBP)

ICBP is a manufacturer of a wide range of branded consumer products that are well established and leading with a wide selection of everyday solutions products for consumers of all ages. Many of brand products is a leading brand that has been embedded in the hearts of society Indonesia, as well as gain the trust and loyalty of millions consumers in Indonesia for years. ICBP was founded in September 2009 through the process of internal restructuring of the Group's Branded consumer products ("CBP") PT Indofood Successful Prosperous Tbk ("Indofood"). Through the process of internal restructuring, the business activities of the Group of Indofood CBP, including instant noodles, dairy, snacks, Food flavorings, nutrients and special food, as well as biscuits (previously incorporated in the Group Does), redirected to the ICBP. ICBP has recorded its share in BEI since October 7, 2010. At the moment, Indofood remained the majority shareholder ICBP with approximately 80% share ownership. Therefore, ICBP still has synergies with other companies to increase the prominence of Indofood competitive.

4.1.5 Indofood Sukses Makmur Tbk (INDF)

Indofood Successful Prosperous Tbk (INDF) was established on August 14, 1990 under the name of PT Panganjaya Intikusuma and start commercial business activities in 1990. The head office is located in the INDF Sudirman Plaza, Indofood Tower, 21st floor, JL. Jend. Sudirman Kav. 76 – 78, 12910 Jakarta – Indonesia. While the factory and plantation INDF and subsidiary located in various places on the island of Java, Sumatra, Kalimantan, Sulawesi and Malaysia. Parent undertakings of Indofood Successful Prosperous Tbk are the CAB Holding (have 50.07% of the INDF), while holding the last effort of Indofood Successful Prosperous Tbk is the First Pacific Company Limited (FP), Hong Kong.

Currently, the company has a subsidiary, which also listed on the Indonesia stock exchange. The scope activities of Indofood CBP Successful Prosperous Tbk (ICBP) and Salim Ivomas Pratama Tbk (SIMP) among others consist of setting up and running the industry processed food, condiments, bottled soft drinks, cooking oil, milling wheat flour sack making and textiles. Indofood has products with brands that have been known to the public, among other instant noodles (Indomie, Supermi, Sarimi, Sakura, Pop Pop rice vermicelli noodles, Egg Noodles and Cap 3 chicken), dairy (Indomilk, Cap Enaak, three cows, Indomilk Champ, Calciskim, Orchid Butter and Indoeskrim), a light meal (Chitato, Lays, Cheetos, Qtela and JetZ), flavoring meals (Indofood, a plate of Lombok, Indofood Racik and Maggi), nutrition food & special (Promina, SUN, Govit and Provita), the drinks (Ichi Ocha, Tekita, Caféla, Club, lyrics, Tropicana Twister, Fruitamin, and Indofood Freiss), white flour Pasta & (Twin Disc, a blue triangle, Blue Key, the Red badge, Chesa, La Fonte), butter and cooking oil (Bimoli and Palmia) in 1994. INDF obtain effective statement from Indonesian capital Market control and financial organization (Badan Pengawas Pasar Modal dan Lembaga Keuangan) to perform initial public offering (IPO) INDF to society as much as 21,000,000 with nominal value of Rp 1,000 per share offer price with the Rp 6,200 per share. The stocks listed on the Indonesia stock exchange on July 14, 1994

4.1.6 PT Indocement Tunggal Prakarsa Tbk (INTP)

PT Indocement Tunggal Prakarsa Tbk is one of cement producers in Indonesia. Indocement is the second largest manufacturer in Indonesia. In addition to producing cement, Indocement also manufactures the concrete ready-wear, as well as manage aggregate quarry. Indocement was founded January 16, 1985. This company is the result of the merger of six cement companies, which has eight factories. First, Indocement have operated since August 4, 1975. 31 December 2014,

Indocement have production capacity of 20.4 million tons of cement per year. In addition, Indocement also has a production capacity of concrete ready-made amounting to 4.4 Million cubic meters per year with 41 batching plant and 706 truck mixers, as well as producing an aggregate of 2.7 million tons.

Indocement has 12 factories, nine of which are located in Citeureup, Bogor regency, West Java. Two in Cirebon, West Java, and one in Tarjun, Kotabaru, South Kalimantan. Indocement is the main product of cement type Ordinary Portland Cement abbreviated OPC and Pozzolan Portland Cement abbreviated PPC which was then replaced by Portland Composite Cement abbreviated PCC since 2005. Indocement also manufactures other types of cement such as Portland Cement Type II and Type V and the Oil Well Cement. Indocement is also the only producer of White Cement types cement (White Cement) in Indonesia.

Indocement was first recorded in Indonesia stock exchange on 5 December 1989. Since 2001, the Heidelberg Cement Group, which is based in Germany and is the major producer in the world with factories in more than 50 countries, took over the ownership of a majority stock in Indocement.

4.1.7 PT Kalbe Farma Tbk (KLBF)

PT Kalbe Farma Tbk. is an international company that produces pharmaceuticals, supplements, nutrition, and health services, based in Jakarta, Indonesia. The company produces a wide variety of pharmaceutical ingredients. Kalbe has the motto of Innovation for a Better Life. Besides Indonesia, Kalbe has 10 branches overseas, namely the ASEAN countries (Singapore, Philippines, Malaysia, Thailand, Cambodia, Viet Nam, and Burma), Sri Lanka, Nigeria, and South Africa.

Six brothers, namely Khouw Lip Tjoen, Khouw Lip Hiang, Khouw Lip Boenjamin Setiawan, Swan, Mary Bing Karmila, founded Kalbe Farma on September

10, 1966. Kalbe has far evolved from the beginning as a pharmacy business, which is manage in the home of its founder's garage in North Jakarta. For more than 40 years, Kalbe has business development. Kalbe repeatedly done through the strategic acquisition of other pharmaceutical companies, building product brands, and reach out to international markets in order to become a product company. Kalbe transformation of health and nutrition that is integrated with the power of innovation, marketing strategy, brand development, distribution, financial strength, expertise in research and development as well as the difficult production matched only in realizing its mission to improve the health for a better life.

Kalbe has succeeded in positioning brands as the leader in each category of therapy and industrial segment not only in Indonesia but also in various international markets, health products and medicines that have been always a mainstay of the family such as Promag, Mixagrip, Woods, Komix, Prenagen, and Extra Joss. Furthermore, the construction and the development of alliances with international partners has pushed development of Kalbe on international markets and participation in research projects and the development of sophisticated and contributed in the recent discoveries in the field of health and pharmaceutical research include stem cells and cancer.

Implementation of the consolidation Group in 2005, Kalbe has strengthened the ability of the production, marketing and finance capability thus increasing Kalbe in order to expand efforts at local level both Kalbe and internationally. Today, Kalbe is one of the largest pharmaceutical companies in Southeast Asia whose shares have been recorded at the stock exchange with a market capitalization value of over US $ 1 billion and sales exceed Rp7 trillion. A very good cash position at this time also gives flexibility in enterprise development Kalbe on the future. In 1992, through the

Education Foundation Kalbe, Kalbe founded STIE (School of Higher Economics) Kalbe, which finally in 2009 changed its name to the Institute of technology and the business of Kalbe.

4.1.8 Semen Indonesia (Persero) Tbk (SMGR)

Cement Indonesia (Persero) Tbk (formerly known as Semen Gresik (Persero) Tbk) (SMGR) was established March 25, 1953, with the name "Gresik cement factory" and began operating commercially on 7 August 1957. The head office is located in SMGR JL. Veteran, Gresik, East Java, 61122 and representative offices in The East Building, 18th floor, JL. DR. Ide Anak Agung Gde Agung Kuningan, Jakarta 12950 – Indonesia. SMGR and cement factory subsidiary located in East Java (Tuban and Gresik), Indarung in West Sumatera, South Sulawesi in Pangkep an Quang Ninh in Viet Nam. Controlling shareholder of cement Indonesia (Persero) Tbk is the Government of the Republic of Indonesia, with the percentage of ownership of 51.01%.

Based on the company's articles of Association, the scope of activities includes a wide range of industrial activities. Types of cement are produced by SMGR, among others: Portland cement (type I, II, III and V), Special Blended Cement, Portland Pozzolan Cement, Portland Composite Cement, Masonry Cement and Super Oil Well Cement Class G HRC. Currently, the main activity of the company is moving in the cement industry. The results of the Production Company and subsidiary marketed inside and outside the country. On 04 July 1991, gaining effective statement from Indonesian capital Market control and financial organization (Badan Pengawas Pasar Modal dan Lembaga Keuangan) to perform initial public offering (IPO) to society as much as 40,000,000 with a nominal value of Rp 1,000 per share offer priced at Rp 7,000 per share. The stocks listed on the Indonesia stock exchange on 08 July 1991.

4.1.9 Unilever Indonesia Tbk (UNVR)

Unilever Indonesia Tbk (UNVR) was established on 5 December 1933 with the name Lever's Zeepfabrieken N.V. and begin operating commercially in 1933. Unilever

headquarters is located at JL. Jendral Gatot Subroto Kav. 15, Jakarta 12930, and factory located at JL. Jababeka 9 Block D, JL. Jababeka Kingdom block O, JL. Jababeka V V No. 14-16, the Industry Jababeka Cikarang, Bekasi, West Java and Rungkut Industrial IV. Jl # 5-11, Rungkut, Surabaya's industrial area, East Java. Unilever Indonesia efforts were the parent of Unilever Indonesia Holding B.V. with the percentage of ownership of 84.99%, while the main effort was the parent Unilever N.V., the Netherlands.

Based on the company's articles of Association, the scope of business activities of UNVR include the areas of production, marketing and distribution of consumer goods that include SOAP, detergents, margarine, dairy nucleated food, ice cream, cosmetic products, beverages with a staple of tea and juice drinks. Brands owned by Unilever Indonesia, among others: Rinso, Molto, Domestos, Cif, Unilever puree, Surf, Sunlight, Vixal, Super Pell, Wipol, Lux, Rexona, Sunsilk, Lifebuoy, Closeup, Fair, Lovely & Zwitsal, pond's, Dove, TRESemme, Pepsodent, AXE, Clear, Vaseline, Citra, Citra Hazeline, SariWangi, Bango, Blue Band, Royco, Buavita, Buavita Wall, Wall, Lipton, Magnum, Cornetto, Paddle Pop, Feast, Viennetta and Popular.

On November 16, 1982, UNVR obtained the effective statement from Indonesian capital Market control and financial organization (Badan Pengawas Pasar Modal dan Lembaga Keuangan) to conduct initial public offering (IPO) to the community as much as 9,200,000 with a nominal value of Rp 1,000 per share offer price of Rp with 3,175 per share. The stocks listed on the Indonesia stock exchange on January 11, 1982.

4.2 The results of the research and the discussion

In this research, a Fund of Rp. 1,522,866,780,000 (based on exposure of 29 January 2016) have been invested by nine companies manufacturing Indonesia which is the sample in this research form of investment shares on the capital market. The reason the election on 29 January 2016 as the exposure is due on the date of this research will be assumed as the current situation (current situation in the research period). In general, the reason the selection of shares by management of the company manufacturing Indonesia is based on the consideration of the diversification of investments in various kinds of stock. If the return of an asset class is going through a downturn, then return the other asset classes is expected to increase, so that an overall portfolio return is relatively stable.

The composition of the portfolio of stocks that are used as research data as shown in Table 4.1 as follows:

Table 4.1 Stocks Exposure of the Indonesia Manufacturing Companies

Shares	Lot	Shares Volume	Closing Price	Value of portfolio	Weight
ASII	932,481	93,248,100	6,450	601,450,245,000	39.49%
CPIN	154,889	15,488,900	3,345	51,810,370,500	3.40%
GGRM	14,341	1,434,100	58,350	83,679,735,000	5.49%
ICBP	45,212	4,521,200	14,450	65,331,340,000	4.29%
INDF	179,966	17,996,600	6,200	111,578,920,000	7.33%
INTP	54,173	5,417,300	19,700	106,720,810,000	7.01%
KLBF	1,027,517	102,751,700	1,335	137,173,519,500	9.01%
SMGR	166,838	16,683,800	11,050	184,355,990,000	12.11%
UNVR	49,255	4,925,500	36,700	180,765,850,000	11.87%
Total		262,467,200		1,522,866,780,000	100%

Source: Data process, Appendix 2

Based on the exposure of the stock investment made by Companies manufacturing Indonesia it appears that the selection of issuers still dominated by the

automotive sector sub (39.49%) i.e. to stock ASII (Astra), this can be understood given the very development of automotive companies in Indonesia due to the large number of market demand for motor vehicles.

4.3 Calculation Of Data Return

Investment return data stock is continual and time series data, so to find out the results of the daily return can be calculated using geometric methods return, which is a logarithmic function of the price ratio. The use of the geometric return to avoid biased results related to the magnitude of the influence on divided as common elements in the calculation using the arithmetic return.

Based approach with geometric return, can then be calculated return on his daily respectively for nine selected stocks. After the return of each stock daily known throughout the period specified, and then calculated the daily portfolio return anyway from the stocks. Return is then assigned a proportion of (weighted) the magnitude of the value of each of the stocks that make up the portfolio weighting as portfolios. If the whole weight of the overall aggregated portfolio does it, weigh is 100%.

Related to the purpose of the research will measure the potential value of a loss of 9 types of auctions that have been set out in the investment decision, then it should be calculated return of each stock by using historical data. Historical data used in the research starting from the date of February 1, 2013 at up to 29 january 2016 or equal to 780 daily data. This research period selected based on the newest research and concluded on January 29, 2016 due to the determination of stock assignment LQ-45 is done twice in a year is the month of February to July and August to January. The results of the calculation of the return made against results mean of return, minimum and maximum return, standard deviation, and skewness calculation with the results as presented in Table 4.2 as follows:

Table 4.2 The calculation of the average, minimum and maximum return standard deviation, and skewness nine types of Stocks

Code	Minimum	Maximum	Average	Standard Deviation	Skewness
ASII	-0.08973	0.10697	0.00018	0.02148	0.16000
CPIN	-0.16814	0.14698	0.00016	0.03082	-0.28400
GGRM	-0.08521	0.07947	0.00014	0.02093	-0.05900
ICBP	-0.07333	0.08923	0.00074	0.02037	0.24600
INDF	-0.10228	0.11980	0.00005	0.02140	0.22600
INTP	-0.10827	0.10935	0.00011	0.02434	0.12900
KLBF	-0.09685	0.10368	0.00026	0.02128	0.13200
SMGR	-0.12201	0.11922	0.00047	0.02332	0.04900
UNVR	-0.07015	0.13217	0.00066	0.02087	0.77700

Source: Data Process, Appendix 3

Based on the results of the calculations are done with SPSS and Excel software showed the following results:

1. On the calculation of the Average return of nine stocks were analyzed during the period February 1, 2013 until 29 January 2016, the INDF stock is stock with the lowest return i.e. 0.00005 and the highest average return achieved by ICBP of 0.0074.
2. In the calculation of the maximum value, the highest value of the returned Results in that period reached by the shares of the CPIN, which reached 0.1469 .
3. While the minimum value in the calculation of the value of the biggest losses in the period is CPIN reached by 0.1681.

To perform the calculation of the magnitude of the potential loss by using the method of measurement of Value at Risk then the next return data characteristics must be known whether the distribution of the data is normal or abnormal. To perform the calculation of the value of the VaR data testing must be done then return towards

nine types of selected stocks. Testing is done to the normality of data heteroscedasticity data, and returns the results as presented below.

4.3.1 Normality test

Test of normality was done with the aim to find out whether the distribution of the data return nine stocks has a normal distribution or not/skewed. If the data return has a normal distribution then the value of α is α value corresponding to a z score (α – normal). If the data have not normal distribution, then used α' as z score, which is calculated using a formula of Cornish Fisher Expansion to determine the value of Z correction.

Normality tests performed using SPSS software tools. SPSS output could be obtained from the value of the probability of z data return of each stock that can be seen on the results of the significance of one sample Colmogorov Smirnov test. Test of normality was done by looking at the value of Asymp. SIG (2-tailed). When the value of the probability Asymp. SIG (2-tailed) is greater than 0.05 then, return is considered to have a normal distribution. Test of normality made against any individual stock return and stock portfolio. Normality test results are present in Table 4.3 below:

Table 4.3 Normality Test of Nine Stocks

Code	Z Score	Asymp. Sig. (2-tailed)	Note
ASII	2.63800	0.00000	Not Normal
CPIN	2.41700	0.00000	Not Normal
GGRM	2.28600	0.00000	Not Normal
ICBP	2.87600	0.00000	Not Normal
INDF	3.54500	0.00000	Not Normal
INTP	2.80000	0.00000	Not Normal
KLBF	2.62100	0.00000	Not Normal
SMGR	2.90500	0.00000	Not Normal
UNVR	2.45600	0.00000	Not Normal
Total	14.43900	0.00000	Not Normal

Source: Data Process, Appendix 4

Based on normality testing table, can be inferred that the return of the overall nine stocks are not normal/skewed because the value of Asymp. SIG (2-tailed) smaller than 0.05. Therefore, to do the calculation of the Variance-Covariance is need to calculate z score using Cornish Fisher Expansion formula to determine the value of Z correction. After a test of normality return known data that the data was not Normal, then the adjustment must be performed against the value of α.

On a normal distribution of α that is used comes from the normal use the value of the Z-score. If the distribution is not normal then α that is used is the result of an adjustment by using the Z correction. Customization of the form α was conducted on the skewness Normality data by using the equation of Cornish-Fisher Expansion as follows

$$\alpha' = \alpha - 1/6\ (\alpha^2 - 1) \times \xi$$

The results of the calculation of the value of the Z-corrections and skewness as presented in table 4.4 below, it appears that the value of the skewness is composed of positive and negative values. Negative skewness values mean the skewness of the distribution towards the left, and if the value is positive the skewness of the curve together to the right:

Table 4.4 Value of Z-Correction and Skewness

Code	Z Score	Skewness	Z Correction (α´)
ASII	2.63800	0.16000	2.479092
CPIN	2.41700	-0.28400	2.646183
GGRM	2.28600	-0.05900	2.327554
ICBP	2.87600	0.24600	2.577874
INDF	3.54500	0.22600	3.109309
INTP	2.80000	0.12900	2.65294
KLBF	2.62100	0.13200	2.491868
SMGR	2.90500	0.04900	2.844248
UNVR	2.45600	0.77700	1.804364

Portfolio	14.43900	0.29900	4.099345
Average	3.89830	0.16750	2.70328

Source: Data process.

4.3.2 Heteroscedasticity test

Heteroscedasticity test is carried out with the aim to find out whether the data returned are homoscedasticity or heteroscedasticity. Heteroscedasticity test is carried out using SPSS software tools. Heteroscedasticity test using SPSS is done with the gletjer test by comparing the value of the probability of the t-statistics with probability of critical value of 0.05. When the value of the probability of the sigificant-t is less than 0.05 then the data return is considered heteroscedasticity. When the value of the probability of the significant-t greater than 0.05 then, the data return is consider homoscedasticity. By using this, it can be inferred that the volatility of the return of each stock has characteristics that are heteroscedasticity. The detailed results of the testing for the nine stocks as presented in table 4.5 below:

Table 4.5 Heteroscedasticity Test

Model		t	Sig.	Collinearity Statistics	
				Tolerance	VIF
1	(Constant)	-.653	.514		
	Shares_Price	.891	.373	1.000	1.000

Source: Data Process, Appendix 5

Based on Table 4.5 data return are Homoscedasticity because significant-t more than 0.05, so to do the calculation of volatility of return by using the EWMA approach does not needed.

4.4 Volatility test

4.4.1 Variance Covariance Matrix

Portfolio Variance is the variance of the weighted summation of results each stock plus the weighted covariance between stocks. Steps to calculate the VaR to do on the equations to find the variance of portfolio values must be obtained as follows: Variance returns each share the correlation between their respective shares of the Covariance between each stock; calculate the proportion of weighted weights or weight each stock. To perform the calculation of the Variance Covariance Matrix is then used some of the matrix as follows:

1.4.1.1. Matrix Volatility (V)

In the matrix the volatility, calculated the value of the standard deviation of each of the stock, which is the root of the variance of the returned top nine stocks selected. For ease of doing the calculations then the calculation of the standard deviation of each stock is carried out with the help of Excel software application. Standard deviation calculation results presented in table 4.6 below

Table 4.6 Matrix Volatility (V)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0.02148								
CPIN		0.03082							
GGRM			0.02093						
ICBP				0.02037					
INDF					0.02140				
INTP						0.02434			
KLBF							0.02128		
SMGR								0.02332	
UNVR									0.02087

Source: Data process, Appendix 6

4.4.1.2. Matrix Correlation (C)

After the calculation of variance for each stock of known results, then do the calculation of the correlation between each stake. The correlation matrix is performed to measure the relationship between the two shares in the investment portfolio. The same as the calculation of the standard deviation, the calculation of the correlation between the respective shares are also carried out with the help of Excel software application. The results of the calculation of the correlation between the respective shares are presented in table 4.7 below:

Table 4.7 Matrix Correlation (C)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	1	0.47436	0.32224	0.37442	0.45320	0.49842	0.42130	0.51168	0.42408
CPIN	0.47436	1	0.42188	0.36999	0.39591	0.44034	0.40725	0.47591	0.40942
GGRM	0.32224	0.42188	1	0.31617	0.33692	0.35293	0.33643	0.36954	0.34128
ICBP	0.37442	0.36999	0.31617	1	0.36814	0.33278	0.43199	0.30018	0.34605
INDF	0.45320	0.39591	0.33692	0.36814	1	0.48233	0.40005	0.40269	0.41037
INTP	0.49842	0.44034	0.35293	0.33278	0.48233	1	0.43545	0.68637	0.37137
KLBF	0.42130	0.40725	0.33643	0.43199	0.40005	0.43545	1	0.41835	0.46918

SMGR	0.51168	0.47591	0.36954	0.30018	0.40269	0.68637	0.41835	1	0.38095
UNVR	0.42408	0.40942	0.34128	0.34605	0.41037	0.37137	0.46918	0.38095	1

Source: Data processed, Appendix 6

4.4.1.3. Matrix Covariance (V x C x V)

After the value of volatility (V) or standard deviation in table 4.6, and the correlation value (C) in table 4.7, next set the value of Covariance for each stock. Preparation of matrix VxCxV is carried out to obtain the value of the Covariance done by multiplying the calculation result between standard deviation (matrix variance) of each stock as a result Table 4.6 calculation results with correlation or volatility between the two stocks as a result Table 4.7. The calculation result between volatility (V) multiplied by (C) produce a Correlation Matrix Volatility x Correlation (VC) as shown in Table 4.8 below:

Table 4.8 Matrix Volatility x Correlation (VC)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0.000461	0.000314	0.000145	0.000164	0.000208	0.000261	0.000193	0.000256	0.000190
CPIN	0.000314	0.000949	0.000272	0.000232	0.000261	0.000330	0.000267	0.000342	0.000263
GGRM	0.000145	0.000272	0.000437	0.000135	0.000151	0.000180	0.000150	0.000180	0.000149
ICBP	0.000164	0.000232	0.000135	0.000414	0.000160	0.000165	0.000187	0.000143	0.000147
INDF	0.000208	0.000261	0.000151	0.000160	0.000457	0.000251	0.000182	0.000201	0.000183
INTP	0.000261	0.000330	0.000180	0.000165	0.000251	0.000592	0.000226	0.000390	0.000189
KLBF	0.000193	0.000267	0.000150	0.000187	0.000182	0.000226	0.000452	0.000208	0.000208
SMGR	0.000256	0.000342	0.000180	0.000143	0.000201	0.000390	0.000208	0.000543	0.000185
UNVR	0.000190	0.000263	0.000149	0.000147	0.000183	0.000189	0.000208	0.000185	0.000435

Continuous Table 4.8 Matrix Volatility x

Source: Data process, Appendix 6

Next do the multiplication between Table 4.8 with the calculation result over

the standard deviation of the stock more, the results in the form of a matrix Volatility x Correlation x Volatility (V x C x V). The results of the calculation of matrix VCV looks like in table 4.9 below:

Table 4.9 Matrix Volatility x Correlation x Volatility (VCV)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0.000461	0.474359	0.322242	0.374418	0.453203	0.498423	0.421304	0.511683	0.424078
CPIN	0.474359	0.000949	0.421882	0.369994	0.395911	0.440341	0.407253	0.475913	0.409423
GGRM	0.322242	0.421882	0.000437	0.316169	0.336921	0.35293	0.336426	0.369543	0.341284
ICBP	0.374418	0.369994	0.316169	0.000414	0.368141	0.332778	0.431989	0.300177	0.346048
INDF	0.453203	0.395911	0.336921	0.368141	0.000457	0.482328	0.400054	0.402692	0.410373
INTP	0.498423	0.440341	0.35293	0.332778	0.482328	0.000592	0.435452	0.686373	0.371374
KLBF	0.421304	0.407253	0.336426	0.431989	0.400054	0.435452	0.000452	0.418354	0.469185
SMGR	0.511683	0.475913	0.369543	0.300177	0.402692	0.686373	0.418354	0.000543	0.380949
UNVR	0.424078	0.409423	0.341284	0.346048	0.410373	0.371374	0.469185	0.380949	0.000435

Source: Data process, Appendix 6

4.5 Variance Covariance VaR Calculation

In doing the calculation of VaR model Variance Covariance using the assumption that changes the value of an asset over a specific period will be distributed normally. If a value changes are not distributed normally has to be done by adjusting the correction confident interval parameter (α). The adjustment is carried out using the formula of the Cornish-Fisher Expansion.

4.5.1 Z Correction Value

Based on the results of a test of normality that is conducted in research shows that return of nine stocks turns out abnormally distributed (skewed). Therefore, to do a calculation of VaR Variance Covariance model should use the Z-correction

approach, through the adjustment interval confident parameter (α), according to the formula of the Cornish-Fisher Expansion. The calculations being performed can be specified Z-value correction for each stock as presented in table 4.4 above, it appears that the value of the skewness is composed of positive and negative values. If the distribution mean negative towards the left, and if the value is positive skewness of the curve together towards the right.

Once known the value of Z for each correction the stock, then it can be calculated the magnitude of the value of VaR for each stock. The purpose of doing the calculation of VaR is in order to answer the question of research first, i.e. to know and measure the maximum amount of potential losses over any horizon shares with a time of 1 day, 5-day, 10-day and 20-day fore by using measurement Variance Covariance models.

4.5.2 The calculation of the Variance Covariance VaR each stock

The value of the VaR indicates the maximum potential loss financial assets or portfolios owned in a period of utilization with a certain level of trust. Further calculation of the Variance Covariance VaR done for each stock is present in Table 4.10 below:

Table 4.10 Calculation of VaR with a Time Horizon 1 day, 5 days, 10 days, and 20 days ahead

Code	Price Exposure	St. Deviation	Z correction	VAR 1 day	VAR 5 Days	VAR 10 Days	Var 20 Days
ASII	6,450	0.02148	2.47909216	343.38947	767.84220	1,085.892853	1,535.6844
CPIN	3,345	0.03082	2.646182746	272.80133	610.002308	862.6735373	1,220.00462
GGRM	58,350	0.02093	2.327553661	2,842.41023	6,355.8225	8,988.490381	12,711.645
ICBP	14,450	0.02037	2.577873584	758.63385	1,696.35686	2,399.010879	3,392.71372
INDF	6,200	0.02140	3.109308725	412.46173	922.292466	1,304.318513	1,844.58493
INTP	19,700	0.02434	2.65294	1,272.01305	2,844.30765	4,022.458452	5,688.6153

Continuous Table 4.10 Calculation of VaR with a Time Horizon 1 day, 5 days, 10 days, and 20 days ahead

KLBF	1,335	0.02128	2.491867898	70.79996	158.31352	223.8891277	316.627041
SMGR	11,050	0.02332	2.844247963	732.80188	1,638.59482	2,317.323011	3,277.18963
UNVR	36,700	0.02087	1.804364288	1,381.75932	3,089.70778	4,369.506645	6,179.41556

Source: Data process, Appendix 7

In the table above, it is seen that the highest VaR for a period of 1 day per sheet to the stock occurred at GGRM shares amounting to Rp 2,842.41023, while VaR lowest occurred on stock KLBF Rp. 70.79. VaR for a period of 5 days next to per shares happens to shares GGRM amounting to Rp. 6,355.8225 whereas the lowest VaR occurred on stock KLBF Rp. 158.31352. Var for a period of 10 days to the fore for per shares happen to GGRM shares amounting to Rp. 8,988.490381 while VaR lowest occurred on stock KLBF Rp. 223.889. Var for a period of 20 days to the fore for per shares happen to GGRM shares amounting to Rp. 12,711.645 while VaR lowest occurred on stock KLBF Rp. 316.627041.

4.5.3 Calculation of Diversified VaR Variance Covariance Portfolio

Calculations for a diversified portfolio VaR is used to calculate the overall portfolio VaR (rather than per-shares). Based on the calculations on individual stock return abnormally distributed (skewed) then the calculation should use the Z correction for the portfolio. The following is a diversified Portfolio VaR calculation is as follows:

Table 4.11 Calculation of Diversified Variance Covariance Portfolio

Standard Deviation Porfolio	0.00245
Total Exposure	157580.00
Z correction	2.703278
t 5 days=	2.236068
t 10 days=	3.162278
t 20 days=	4.472136
VaR Portfolio 1day=	1043.231
VaR Portfolio 5days=	2332.736
VaR Portfolio 10days=	3298.986

Source: Data processed,2016

VaR Portfolio 20days=	4665.471

VaR Variance Covariance diversified portfolio, for the entire time horizon. The results have proved that the value of stock risks individually can be reduced or minimized by diversification through a portfolio of stocks.

4.6 Calculation of VaR by Historical Simulation

One of the methods that can be used to calculate VaR using historical data upon the return of shares or stock portfolio is to use a model of Historical Simulation. The way that must be taken in calculating the value of the VaR by Historical Simulation, first done with the sort of stock return data. Sorting starts from the value of the largest losses up to the amount of profit the largest. After it made the list with percentile confidence level assigned. In this study the number of stock return data used as many as 780 data coherently time (time series) with a 95% confidence level, so 5% of that data is data number 39 with data return number- 39 are used as a percentile value calculated VaR Historical Simulation. Calculation of maximum losses to top nine stocks is carried out using the same return data used in the calculation of the Variance Covariance VaR exposure. Data used is the position closing on 29 February 2016 using the following formula:

$$VaR = Vo \times Percentile\ 5\% \times \sqrt{t}$$

The results of calculation of VaR Historical Simulation over nine stocks are presented in table 4. 12 under this:

Table 4.12 VaR Historical Simulation Calculation

Code	Price	Percentile data-39	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	6,450	-0.03718	-239.805	-536.2193	-758.32864	-1072.4386
CPIN	3,345	-0.05380	-179.97	-402.4253	-569.11527	-804.85054
GGRM	58,350	-0.03440	-2007.32	-4488.511	-6347.7135	-8977.0225
ICBP	14,450	-0.03348	-483.727	-1081.647	-1529.6796	-2163.2937
INDF	6,200	-0.03031	-187.893	-420.1419	-594.17036	-840.28379

Souce: Data Process, Appendix

INTP	19,700	-0.03792	-747.009	-1670.363	-2362.2496	-3340.7255
KLBF	1,335	-0.03534	-47.1781	-105.4933	-149.19011	-210.98667
SMGR	11,050	-0.04032	-445.547	-996.2729	-1408.9426	-1992.5457
UNVR	36,700	-0.03237	-1187.81	-2656.015	-3756.1722	-5312.0297

On 1 day VaR, value at risk of the greatest experienced by GGRM Rp-2,007.32 and the smallest Value at risk experienced by KLBF is Rp.-47.1781. On 5 days VaR, value at risk of the greatest experienced by GGRM Rp-4,488.511 and the smallest Value at risk experienced by KLBF is Rp-105.4933. On 10 days VaR, value at risk of the greatest experienced by GGRM Rp-6,347.7135 and the smallest Value at risk experienced by KLBF is Rp-149.19011. On 20 days VaR, value at risk of the greatest experienced by GGRM Rp-8,977.0225 and the smallest Value at risk experienced by KLBF is Rp. -210.98667.

4.7 Calculation of VaR by Monte Carlo Simulation

One of the methods that can be used to calculate VaR using Monte Carlo data random the return of shares or stock portfolio is to use a model of Monte Carlo Simulation. The results of calculation of VaR Monte Carlo Simulation over ten stocks are present in table 4.13:

Table 4.13 VaR Monte Carlo Simulation Calculation

Code	Drift	Future Price	Percentile 5%	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	-0.00042	6447.48537	-0.000754	-4.86	-10.87042974	-15.37310917	-21.74085948
CPIN	-0.00064	3343.35985	-0.000754	-2.520893325	-5.636888839	-7.971764646	-11.27377768
GGRM	-0.00008	58325.47691	-0.000728	-42.46094719	-94.94556431	-134.2733047	-189.8911286
ICBP	0.00053	14444.76891	-0.000761	-10.99246914	-24.57990825	-34.7612396	-49.15981649
INDF	-0.00018	6197.32719	-0.000704	-4.362918344	-9.755781998	-13.79675921	-19.511564
INTP	-0.00041	19695.36633	-0.000698	-13.7473657	-30.74004421	-43.47298742	-61.48008841
KLBF	0.00003	1334.31812	-0.000701	-0.935357002	-2.09152184	-2.957858552	-4.18304368
SMGR	-0.00074	11041.01894	-0.000744	-8.214518091	-18.36822085	-25.97658705	-36.73644171
UNVR	0.00044	36689.69895	-0.000767	-28.1409991	-62.92518694	-88.98965278	-125.8503739

Source: Data process, Appendix 9

4.8 The VaR Model Testing

To test whether the model calculation of VaR is accurate/valid or not, then the required testing is Backtesting (Jorion, 2007). One of backtesting model is done with Test Kupiec (Kupiec, 1995) that is by comparing the test results between actual return data value prediction VaR. Results comparison is done to calculate the rate of failure (failure rate) of each model. In testing, the backtesting committed against the Variance Covariance model, Historical Simulation, and Monte Carlo Simulation to find out the validity of the magnitude of the potential loss of nine stocks that are examined. The models used are the Kupiec Tests by using the test data as much as 255 data 1 year final since March 1, 2015, up to 29 January 2016. If it is known that the rate of failure (failure rate) are in the range of N<21 when T = 255, then the VaR model is said to be valid enough to measure the maximum potential loss (Jorion, 2007)

The results of the testing done either using the Variance Covariance model as well as using the model of Historical Simulation shows the results turned out to be a different validation to measure the potential loss of a maximum of 9 stocks individually as presented in table 4.14 below.

Table 4.14 Back Testing Result

Code	Variance-Covariance	Validity (<21)	Historical Simulation	Validity (<21)	Monte Carlo Simulation	Validity (<21)
ASII	4	Valid	242	Not Valid	141	Not Valid
CPIN	4	Valid	237	Not Valid	143	Not Valid
GGRM	5	Valid	241	Not Valid	134	Not Valid
ICBP	3	Valid	247	Not Valid	134	Not Valid
INDF	2	Valid	239	Not Valid	136	Not Valid

INTP	8	Valid	242	Not Valid	129	Not Valid
KLBF	5	Valid	239	Not Valid	141	Not Valid
SMGR	2	Valid	243	Not Valid	135	Not Valid
UNVR	12	Valid	244	Not Valid	136	Not Valid

Source: Data Process, Appendix 10

Based on the results of testing the validity of the VaR model on top turns the failure rate generated by Variance-Covariance model entirely is greater compared with Historical Simulation and also Monte Carlo Simulation. Jorion (2007) said that if the value of N>21, then the model was considered too moderate. From the results of the above research States that the calculation of the Variance-Covariance Model is a model that is valid and can be used to measure the value at risk compare with the method of Historical as well as Monte Carlo Simulation. It because Historical and Monte Carlo using 5% percentile, which mean it using 5% data as comparison.

5. CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

Based on the results of research that have been done on manufacturing companies associated with market risk over the selection of an investment portfolio of stocks, the conclusion to be drawn as follows:

1. Measurement of market risk on investment stock either individually or in the portfolio Variance Covariance VaR model turns out to produce greater value compared to using a model of Historical Simulation and Monte Carlo Simulation.
2. Whereas, in the calculation of an undiversified VaR Variance Covariance indicates the result is smaller compared with the calculation of diversified VaR. This has proved that the value of the stock on an individual basis risk cannot be reduced through diversification by portfolio. The results of the calculation of the maximum amount of potential losses of VAR for a period of 1 week, 5 days, 10 days and 20 days ahead for each model are as follows:
   a. VaR Variance Covariance model

Table 5.1 VaR Variance Covariance

Code	Price Exposure	St. Deviation	Z correction	VAR 1 day	VAR 5 Days	VAR 10 Days	Var 20 Days
ASII	6,450	0.02148	2.47909216	343.38947	767.84220	1,085.892853	1,535.6844
CPIN	3,345	0.03082	2.646182746	272.80133	610.002308	862.6735373	1,220.00462
GGRM	58,350	0.02093	2.327553661	2,842.41023	6,355.8225	8,988.490381	12,711.645
ICBP	14,450	0.02037	2.577873584	758.63385	1,696.35686	2,399.010879	3,392.71372

INDF	6,200	0.02140	3.109308725	412.46173	922.292466	1,304.318513	1,844.58493
INTP	19,700	0.02434	2.65294	1,272.01305	2,844.30765	4,022.458452	5,688.6153
KLBF	1,335	0.02128	2.491867898	70.79996	158.31352	223.8891277	316.627041
SMGR	11,050	0.02332	2.844247963	732.80188	1,638.59482	2,317.323011	3,277.18963
UNVR	36,700	0.02087	1.804364288	1,381.75932	3,089.70778	4,369.506645	6,179.41556

b. VaR Historical Simulation model

Table 5.2 VaR Historical Simulation Model

Code	Price	Percentile data-39	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	6,450	-0.03718	-239.805	-536.2193	-758.32864	-1072.4386
CPIN	3,345	-0.05380	-179.97	-402.4253	-569.11527	-804.85054
GGRM	58,350	-0.03440	-2007.32	-4488.511	-6347.7135	-8977.0225
ICBP	14,450	-0.03348	-483.727	-1081.647	-1529.6796	-2163.2937
INDF	6,200	-0.03031	-187.893	-420.1419	-594.17036	-840.28379
INTP	19,700	-0.03792	-747.009	-1670.363	-2362.2496	-3340.7255
KLBF	1,335	-0.03534	-47.1781	-105.4933	-149.19011	-210.98667
SMGR	11,050	-0.04032	-445.547	-996.2729	-1408.9426	-1992.5457
UNVR	36,700	-0.03237	-1187.81	-2656.015	-3756.1722	-5312.0297

c. VaR Monte Carlo Simulation Model

Table 5.3 VaR Monte Carlo Simulation Model

Code	Drift	Future Price	Percentile 5%	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	-0.00042	6447.48537	-0.000754	-4.86	-10.87042974	-15.37310917	-21.74085948
CPIN	-0.00064	3343.35985	-0.000754	-2.520893325	-5.636888839	-7.971764646	-11.27377768
GGRM	-0.00008	58325.47691	-0.000728	-42.46094719	-94.94556431	-134.2733047	-189.8911286
ICBP	0.00053	14444.76891	-0.000761	-10.99246914	-24.57990825	-34.7612396	-49.15981649
INDF	-0.00018	6197.32719	-0.000704	-4.362918344	-9.755781998	-13.79675921	-19.511564
INTP	-0.00041	19695.36633	-0.000698	-13.7473657	-30.74004421	-43.47298742	-61.48008841
KLBF	0.00003	1334.31812	-0.000701	-0.935357002	-2.09152184	-2.957858552	-4.18304368
SMGR	-0.00074	11041.01894	-0.000744	-8.214518091	-18.36822085	-25.97658705	-36.73644171
UNVR	0.00044	36689.69895	-0.000767	-28.1409991	-62.92518694	-88.98965278	-125.8503739

3. The results of testing against the validity of the model based on the results of back testing, suggests that models i.e. VaR Variance Covariance models model turns out to be valid for use as a tool to measure the maximum potential loss on investment stock manufacturing companies. But Historical Simulation and Monte Carlo turns out not valid for use as a tool to measure the maximum potential loss on investment stock manufacturing company as shown below:

Table 5.3 Validity test

Code	Variance-Covariance	Validity (<21)	Historical Simulation	Validity (<21)	Monte Carlo Simulation	Validity (<21)
ASII	4	Valid	242	Not Valid	141	Not Valid
CPIN	4	Valid	237	Not Valid	143	Not Valid
GGRM	5	Valid	241	Not Valid	134	Not Valid
ICBP	3	Valid	247	Not Valid	134	Not Valid
INDF	2	Valid	239	Not Valid	136	Not Valid
INTP	8	Valid	242	Not Valid	129	Not Valid
KLBF	5	Valid	239	Not Valid	141	Not Valid
SMGR	2	Valid	243	Not Valid	135	Not Valid
UNVR	12	Valid	244	Not Valid	136	Not Valid

5.2 Suggestions

Based on the conclusions of the above study, the following is submitted some suggestions with regard to the results of such research:

1. Investment managers at manufacturing companies are advised to apply the model of the Value at Risk (VaR) in the conduct of market risk measurement,

because the results of the measurement of risk with existing models can be known with certainty in a particular time horizon so easily understood by decision-makers of the investment.

2. For researchers, this study includes new investment portfolio of stocks whose value is around 20% of the total value of the investments made by the manufacturing company. Therefore, it is recommend that research over the potential loss of other investment instruments managed by manufacturing companies such as bonds, and/or mutual funds so that the known risks of investing in a more thorough and comprehensive. This study includes just quantitative result. It is recommend for researchers to do qualitative research as well.
3. The limitation of this research just using 9 companies as sample. Therefore, it is recommend that the next research use more than 9 companies or use more sector not only manufacturing companies.

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LAMPIRAN

APPENDIX

Appendix 1, Sample Classification

No.	Criteria	Total Sample
1.	Companies in Indonesia are enrolled in LQ-45	45 Companies
2.	Companies in Indonesia are listed on the Indonesia stock exchange and present financial reports and a complete ratio with variables will be examined based on the sources used.	45 Companies
3.	Companies in Indonesia are listed on the Indonesia stock exchange IPO before doing years of research (before 2013)	45 Companies
4.	Companies with stocks that active and liquid that meets the criteria 45 stocks most active within 30 days of the last stock exchange or active for the last 3 years	45 Companies
5.	Companies has a market capitalization of over Rp 1 trillion, so that it can represent the values of daily market trading, even capable of being index mover in the formation of the JCI in the Indonesia stock exchange	45 Companies
6.	Companies that during the period of research become a member remains on the LQ-45 (not coming-out)	30 Companies
7.	Manufacturing companies in Indonesia who published financial report in full and detailed	9 Companies

Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6						Criteria 7
					FEB2013-JULY2013	AGST2013-JAN2014	FEB2014-JULY2014	AGST 2014-JANUARY2015	FEB2015-JULY2015	JULY2015-JANUARY2016	
AALI	AALI	AALI	AALI	AALI	AALI	AALI	AALI	AALI	AALI	AALI	ASII
ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	ADRO	CPIN
AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	AKRA	GGRM
ANTM	ANTM	ANTM	ANTM	ANTM	ANTM	ASII	ASII	ASII	ASII	ASII	ICBP
ASII	ASII	ASII	ASII	ASII	ASII	ASRI	ASRI	ASRI	ASRI	ASRI	INDF
ASRI	ASRI	ASRI	ASRI	ASRI	ASRI	BBCA	BBCA	BBCA	BBCA	BBCA	INTP
BBCA	BBCA	BBCA	BBCA	BBCA	BBCA	BBNI	BBNI	BBNI	BBNI	BBNI	KLBF
BBNI	BBNI	BBNI	BBNI	BBNI	BBNI	BBRI	BBRI	BBRI	BBRI	BBRI	SMGR
BBRI	BBRI	BBRI	BBRI	BBRI	BBRI	BBTN	BDMN	BDMN	BDMN	BDMN	UNVR
BBTN	BBTN	BBTN	BBTN	BBTN	BBTN	BDMN	BKSL	BMRI	BMRI	BMRI	
BDMN	BDMN	BDMN	BDMN	BDMN	BDMN	BHIT	BMRI	BMTR	BMTR	BMTR	
BHIT	BHIT	BHIT	BHIT	BHIT	BHIT	BKSL	BMTR	BSDE	BSDE	BSDE	
BKSL	BKSL	BKSL	BKSL	BKSL	BKSL	BMRI	BSDE	CPIN	CPIN	CPIN	
BMRI	BMRI	BMRI	BMRI	BMRI	BMRI	BMTR	CPIN	EXCL	EXCL	EXCL	
BMTR	BMTR	BMTR	BMTR	BMTR	BMTR	BSDE	EXCL	GGRM	GGRM	GGRM	
BSDE	BSDE	BSDE	BSDE	BSDE	BSDE	BUMI	GGRM	HRUM	ICBP	ICBP	
BUMI	BUMI	BUMI	BUMI	BUMI	BUMI	BWPT	HRUM	ICBP	INDF	INDF	
BWPT	BWPT	BWPT	BWPT	BWPT	BWPT	CPIN	ICBP	INDF	INTP	INTP	

CPIN	CPIN	CPIN	CPIN	CPIN	CPIN	EXCL	INDF	INTP	ITMG	ITMG	
EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	GGRM	INTP	ITMG	JSMR	JSMR	
GGRM	GGRM	GGRM	GGRM	GGRM	GGRM	HRUM	ITMG	JSMR	KLBF	KLBF	
GIAA	GIAA	GIAA	GIAA	GIAA	GIAA	ICBP	JSMR	KLBF	LPKR	LPKR	
HRUM	HRUM	HRUM	HRUM	HRUM	HRUM	IMAS	KLBF	LPKR	LSIP	LSIP	
ICBP	ICBP	ICBP	ICBP	ICBP	ICBP	INCO	LPKR	LSIP	MNCN	MNCN	
IMAS	IMAS	IMAS	IMAS	IMAS	IMAS	INDF	LSIP	MNCN	PGAS	PGAS	
INCO	INCO	INCO	INCO	INCO	INCO	INTP	MAIN	PGAS	PTBA	PTBA	
INDF	INDF	INDF	INDF	INDF	INDF	ITMG	MNCN	PTBA	SMGR	SMGR	
INDY	INDY	INDY	INDY	INDY	INDY	JSMR	PGAS	SMGR	TKLM	TKLM	
INTP	INTP	INTP	INTP	INTP	INTP	KLBF	PTBA	TKLM	UNTR	UNTR	
ITMG	ITMG	ITMG	ITMG	ITMG	ITMG	LPKR	SMGR	UNTR	UNVR	UNVR	
JSMR	JSMR	JSMR	JSMR	JSMR	JSMR	LSIP	SSIA	UNVR			
KLBF	KLBF	KLBF	KLBF	KLBF	KLBF	MAIN	TKLM				
LPKR	LPKR	LPKR	LPKR	LPKR	LPKR	MAPI	UNTR				
LSIP	LSIP	LSIP	LSIP	LSIP	LSIP	MNCN	UNVR				
MAIN	MAIN	MAIN	MAIN	MAIN	MAIN	PGAS					
MAPI	MAPI	MAPI	MAPI	MAPI	MAPI	PTBA					
MNCN	MNCN	MNCN	MNCN	MNCN	MNCN	SMCB					
PGAS	PGAS	PGAS	PGAS	PGAS	PGAS	SMGR					
PTBA	PTBA	PTBA	PTBA	PTBA	PTBA	SSIA					
SMCB	SMCB	SMCB	SMCB	SMCB	SMCB	TKLM					
SMGR	SMGR	SMGR	SMGR	SMGR	SMGR	UNTR					
SSIA	SSIA	SSIA	SSIA	SSIA	SSIA	UNVR					
TKLM	TKLM	TKLM	TKLM	TKLM	TKLM						

UNTR	UNTR	UNTR	UNTR	UNTR	UNTR						
UNVR	UNVR	UNVR	UNVR	UNVR	UNVR						

Appendix 2 VOLUME AND CLOSSING PRICE OF SHARES

	ASII		CPIN		GGRM		ICBP		INDF		INTP		KLBF		SMGR		UNVR	
Date	Close	Volume	Close	Volume	Close	Volume	Close	Volume	Close	Volume	Close	Volume	Close	Volume	Close	Volume	Close	Volume
01/02/2013	7450	4617350	3800	3825000	52250	1240000	8100	3334000	5950	2171450	21500	3175000	1090	6411150	15950	10290000	21950	1542000
04/02/2013	7600	4798000	3850	7816500	50700	1752000	8100	2771500	6050	1300100	21450	3237000	1100	4977850	15850	4780000	21950	1596000
05/02/2013	7600	2093600	3875	1354400	49950	1969500	8100	2037500	6050	2045900	21500	3331500	1130	9862150	16250	11496000	22200	3365500
06/02/2013	7550	2034350	3850	9501500	50150	1925500	8050	2150500	6350	3786350	21550	2288000	1120	4471700	16400	8280500	22200	2083500
07/02/2013	7650	2470200	3850	6102000	50400	1209000	8050	2189500	6550	2747550	21550	3137000	1120	4337250	16300	3661000	22300	1820000
08/02/2013	7750	4711750	3900	10279000	49900	1384000	8000	1324500	6600	1608750	21400	4809500	1090	5881050	16150	5273000	22000	2113500
11/02/2013	7700	8715500	3900	2835500	49900	734500	7950	1455500	6700	7072500	21450	467500	1090	2485450	16400	2604500	21950	1239000
12/02/2013	7750	1232300	3925	6644500	49500	1878000	8000	3639500	6700	7066000	21700	1858000	1120	6920100	16700	4173000	22300	1547000
13/02/2013	7800	3090400	3975	5128000	50100	1524500	8000	3220500	6550	1275100	21900	3791000	1140	1,29E+08	16750	4604500	22800	3442500
14/02/2013	7750	2870700	4150	16853500	50000	729000	8000	4954000	6600	7662500	22000	4541000	1130	4158500	16500	7889500	22750	1224500
15/02/2013	7750	1734400	4225	7181500	50450	918000	8000	1173000	6700	1383300	22050	2970500	1130	5114050	16350	12125000	23000	4736000
18/02/2013	7700	1398150	4300	7686500	50650	1078500	8000	3727000	6600	7726500	21850	2763500	1120	1,11E+08	16500	3705500	22900	617500
19/02/2013	7700	2764500	4175	7683000	50950	1683500	8000	3386000	6600	8235500	21750	1646000	1110	1,03E+08	16500	2880500	22750	723500

20/02/2013	7750	29309000	4325	19621000	51300	1585500	8000	4916500	6650	11513000	21700	1936500	1120	1,4E+08	16500	4147000	23200	3930500
21/02/2013	7750	57245000	4300	8691500	51300	1666000	8000	3775500	6950	17185500	21600	2223500	1150	92754000	16550	4262500	23150	1757500
22/02/2013	7750	0	4300	0	50550	901000	8100	2497000	6800	8294000	21450	3109000	1150	0	16550	0	22950	2531000
25/02/2013	7850	29887000	4550	6182000	49750	1768500	8300	9575000	6850	9148500	21450	2900000	1210	86185000	16650	2964500	22850	2226500
26/02/2013	7800	29710000	4625	9186000	49450	1180500	8400	4773500	6900	8396500	21450	3019000	1230	1,01E+08	16650	3612500	22300	2324000
27/02/2013	7900	44216000	4550	8574500	48850	2050000	8550	6324000	7100	9900500	21600	7215500	1270	1,39E+08	16650	4400500	22650	2146500
28/02/2013	7950	35571000	4400	9622500	48300	1459500	8500	2833000	7300	12868000	21950	4717000	1290	86931500	17350	12421500	22850	1923500
01/03/2013	8100	58368000	4450	9640500	49950	1725500	8550	5013500	7400	8649000	22700	11531000	1260	88942000	18150	7185500	22750	935500
04/03/2013	8100	0	4450	0	50000	747000	8250	5541000	7300	16621500	22400	6826500	1300	1,42E+08	17900	9560000	23000	2291000
05/03/2013	8100	36076000	4350	14332500	50000	1369000	8650	6091500	7350	8192000	22400	2694000	1280	64861500	18050	4813000	22800	1538500
06/03/2013	8100	28889500	4325	10804000	50700	1980000	8950	6323500	7850	15989500	22750	4033500	1280	66802500	18050	5346500	22950	1397000
07/03/2013	8200	36541500	4475	7347000	50100	1697000	9100	2716000	7850	14966500	22900	3734500	1320	61315500	18000	7733000	22850	1550500
08/03/2013	8300	35325500	4575	15673000	49850	1096000	9250	1420000	7700	9076000	22750	5109500	1330	85492500	18300	4179500	23000	1556500
11/03/2013	8050	29452500	4725	33306000	49500	631000	8950	2120500	7800	6448500	22550	1192500	1290	69253500	18350	1918000	22900	2340000
12/03/2013	8300	0	4575	0	49850	0	9250	0	7700	0	22750	0	1330	0	18300	0	23000	0
13/03/2013	7950	44721500	4775	18235000	48750	2164000	8950	4166500	7750	15057000	22850	3914500	1270	1,01E+08	18000	10046500	22800	2099500
14/03/2013	7750	53276500	4600	16031000	48200	1485500	9000	3785500	7400	17649000	22500	3203000	1230	71963500	17750	4386000	22000	4995500
15/03/2013	7600	92677000	5000	91690500	49250	1565000	9250	6769500	7250	18029000	22500	7024000	1230	1,48E+08	18250	6455500	22300	2512500
18/03/2013	7700	38150000	5000	12470500	48450	824000	9050	3811000	7500	10603000	22450	1901000	1270	94037000	17950	4620000	22500	1217500
19/03/2013	7650	32907500	4950	12105000	48100	991500	9050	4952000	7400	14892500	22400	3637500	1260	49141000	17850	3525500	22750	2075000
20/03/2013	7700	34015500	4850	12164000	47750	1342500	8750	9240000	7450	16897000	23150	7587000	1260	83996000	17750	6825500	22550	1300000
21/03/2013	7600	37234000	4700	18465000	47150	986500	8850	8908500	7350	14044000	23000	4106000	1240	48607500	17500	7682000	22800	1468500
22/03/2013	7500	41430000	4700	9527500	46100	2180000	8400	11122500	7200	21529000	22150	4415000	1190	73696000	16850	17687500	22100	2925500

25/03/2013	7650	36989000	4725	7572000	46050	1047500	9050	4550500	7350	13956000	22200	2450000	1240	1,01E+08	17500	9171500	22750	2506500
26/03/2013	7750	28480500	4750	8327000	46550	1248000	9150	3966500	7350	12292000	23050	7059000	1260	98748500	18150	16354500	22450	2585500
27/03/2013	7950	33657000	4825	9118500	47000	877000	9500	9279500	7550	15706000	23500	4084500	1290	86990000	18450	9016000	22750	2082500
28/03/2013	7900	37304500	5050	20834000	48950	3901000	9600	3375500	7450	13673500	23300	2947500	1240	85776000	17700	8489500	22800	1377500
29/03/2013	7900	0	5050	0	48950	0	9600	0	7450	0	23300	0	1240	0	17700	0	22800	0
01/04/2013	7850	12344500	5100	7525500	52000	6704000	9900	4929500	7450	4087000	23000	1821000	1250	61476500	17950	3949000	22150	1743000
02/04/2013	7950	14088500	5000	8497500	52950	6120500	9800	2838500	7450	9709000	23250	3095500	1270	71031500	18150	4497000	22650	2553000
03/04/2013	7950	14088500	5000	8497500	52950	6120500	9800	2838500	7450	9709000	23250	3095500	1270	71031500	18150	4497000	22650	2553000
04/04/2013	7700	26627000	4875	3722000	51950	1156500	10000	7628500	7450	15463500	24000	6467500	1230	72106500	17800	5423500	22750	1854500
05/04/2013	7650	24102000	4775	6742000	51650	1059000	10400	4988500	7300	18868500	24050	3753000	1230	94882000	17800	9870000	22950	2320000
08/04/2013	7700	22390500	4725	7360000	49800	1647500	10200	5966000	7250	14877000	24200	3663000	1220	63177500	17750	5878000	22900	1039500
09/04/2013	7700	26725000	4725	6448000	50000	936500	10050	2254000	7500	10530000	24000	5952500	1210	42856000	17750	4889000	22700	1350000
10/04/2013	7550	29609500	4700	20341500	52200	3562000	10250	4001000	7500	5835000	24000	4074000	1230	70721500	17600	8061000	22750	1107000
11/04/2013	7750	25817000	4675	9248000	53450	2045500	10050	2275500	7500	5284000	24100	3425000	1230	46164000	17850	4190500	22900	793500
12/04/2013	7650	20196500	4700	5131500	54250	2581500	10200	3739500	7400	6107000	24000	2119000	1230	91720000	18000	7449500	22800	754000
15/04/2013	7600	16098500	4675	7786500	53500	924000	10100	3805000	7400	8328500	23600	2447000	1260	61549500	17750	2345000	22500	1845000
16/04/2013	7750	28746000	4725	9158000	53000	1320500	10150	1566000	7450	5208000	24400	3596000	1260	74086500	18150	6747000	22850	2164500
17/04/2013	7650	32533000	4725	8394500	53000	1712500	10250	2857500	7500	7328000	25800	3326500	1260	73860000	19000	14769000	22700	1426000
18/04/2013	7750	23069500	4875	14538500	51650	1219500	10550	6116000	7500	5452500	25350	3351000	1270	71392000	18850	5092500	22650	1145500
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22/04/2013	7800	16702000	4750	8362000	49800	2127500	10600	4363500	7350	3518000	24500	1700500	1330	81075000	18850	0	22650	0
23/04/2013	7800	0	4750	0	49800	0	10600	0	7350	0	24500	0	1330	0	18850	0	22650	0
24/04/2013	7800	21364500	4775	13591000	50950	1928500	11250	4414500	7550	12782000	25550	1453500	1370	1,52E+08	18150	18533000	23000	1380500

25/04/2013	7350	97916500	4800	8167500	50100	1782000	11650	3508000	7550	10706000	25000	2926000	1360	92620500	18150	2897500	23000	1390000
26/04/2013	7200	48420500	4900	18099500	50000	2431500	11400	5126000	7500	11141500	25150	2010500	1350	69365000	18150	4788500	22750	1804500
29/04/2013	7400	27028000	4975	7980500	49350	1337500	11300	4001000	7450	6173000	25500	1066500	1380	43715500	18350	4912000	23000	1071500
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01/05/2013	7350	19838500	4975	3010000	50000	1233500	11850	2287000	7400	7377000	26950	2059000	1360	23411000	18800	7117000	25700	2122000
02/05/2013	7200	43554500	4850	6349500	51000	4907500	12100	5621500	7350	9517500	26500	2170500	1350	1,07E+08	18950	13967500	25250	2647000
03/05/2013	6900	70160500	4800	3195500	49950	1300000	12000	4566500	7250	12548500	26250	5037000	1330	44354000	18600	7269000	25900	2870500
06/05/2013	7000	29848500	4975	5788000	50150	870000	12000	3622000	7400	5868000	25250	3358000	1350	51443500	18450	7912000	27000	2555000
07/05/2013	7050	22991500	4950	7256500	51700	1945000	12150	4751000	7300	7303500	25250	1933000	1400	1,05E+08	18600	4486000	27050	2606500
08/05/2013	7100	33887500	4950	10279000	52050	2296500	11950	4003000	7350	10360000	25450	2165500	1430	1,25E+08	18600	6892000	27700	2748500
09/05/2013	7100	0	4950	0	52050	0	11950	0	7350	0	25450	0	1430	0	18600	0	27700	0
10/05/2013	7200	33581000	5000	3482500	53800	2903500	11700	4874000	7200	16459000	25300	3125500	1450	52303000	19000	7233500	27500	2095500
13/05/2013	6950	40503000	4850	7132500	52600	1815500	11750	6595000	7050	20167000	25200	1794500	1470	35031500	18600	3680000	27650	1691500
14/05/2013	7050	39186500	4900	5841500	52650	400000	11900	4527500	7250	12537500	25200	2523500	1460	88821000	18700	6131500	28200	1883500
15/05/2013	7050	30304000	4850	3070000	53600	1219000	12000	4047500	7250	8118500	25650	2485000	1460	64301500	18700	4199000	28100	1149000
16/05/2013	7050	22872000	4850	4042000	54400	1923500	12400	15979000	7400	22907000	25200	2844000	1470	1,09E+08	18550	5427000	28150	1429000
17/05/2013	7050	38274500	4925	4803500	55500	1465500	12700	6424000	7450	11804500	25250	3099000	1540	1,27E+08	18550	5992500	31250	2833500
20/05/2013	7200	41303000	5350	24130000	57650	2192500	12750	4922500	7800	49707500	25600	1720500	1540	1,09E+08	18700	4878500	31550	2268500
21/05/2013	7150	34916000	5350	7641000	56300	1567000	12500	5423500	7600	9608000	25450	4228000	1500	1,14E+08	18850	7221500	30950	1709500
22/05/2013	7150	20706500	5500	9296000	55250	1186000	12550	6827000	7650	15397500	25400	3419500	1510	80246000	18800	5181500	30850	1063000
23/05/2013	7050	58988500	5200	7358500	53000	2087000	12400	4235500	7550	19406500	25300	2788500	1450	88814500	18500	14167000	31600	1991500
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27/05/2013	7000	36517500	5050	18166000	54100	834000	12550	3519000	7300	12797500	24150	7788000	1450	39322000	18000	15805000	31500	2163500

28/05/2013	7450	1,07E+08	5100	8642500	54600	1418500	12700	3862500	7450	13120000	24200	3022000	1480	31020000	18400	4371500	33050	1980500
29/05/2013	7200	70126500	5000	12619500	56500	2365500	12650	10612500	7350	12682500	24450	3537000	1530	89951000	18500	5802500	33450	2136500
30/05/2013	7050	38107500	5100	11633000	56500	1627500	12750	6835000	7350	12595000	24100	5188000	1500	1,02E+08	18250	7071000	32350	2029000
31/05/2013	7050	68167500	4950	13972000	53500	1565500	13100	56024000	7350	17569000	23750	4944500	1450	96152500	18000	7584500	30500	5283000
03/06/2013	7050	48729500	4900	9260000	53150	888000	12600	11412000	7350	10287500	22750	6400000	1430	48072500	17700	1812250	29050	2745000
04/06/2013	7150	28605000	5000	11428500	53650	1293000	12900	7217500	7350	9414000	23900	3703500	1440	57405500	17550	1032750	31300	2636500
05/06/2013	7100	38788000	5050	7512500	53050	442500	12700	4073000	7250	5462500	23100	5051500	1410	41111000	17450	6205000	31000	3820500
06/06/2013	7100	0	5050	0	53050	0	12700	0	7250	0	23100	0	1410	0	17450	0	31000	0
07/06/2013	6800	51403500	4750	9743500	51500	1644500	11900	5618500	7050	18064500	22300	8955500	1370	88667000	16100	4383600	28900	4978500
10/06/2013	6850	45357000	4775	10949500	51200	675500	11400	3717000	6700	15224500	22200	5613500	1350	42942500	16300	1676750	27700	2195500
11/06/2013	6650	43243500	4550	22595500	49100	1704000	11100	5301500	6350	19625500	20600	10658000	1280	80829500	15300	2446250	26900	2445000
12/06/2013	7150	53130500	4725	13803500	48950	1284000	10900	6035000	6900	11438000	21800	8646000	1310	65026500	16550	2264250	29450	2161500
13/06/2013	6900	48893500	4400	13837500	47500	1141000	10700	3265500	6800	20042000	22800	7426000	1290	1,03E+08	16700	1646250	27800	2980500
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17/06/2013	6950	22716000	5100	14195000	50300	890500	10800	2552000	6850	10230500	23900	2156000	1340	80588500	17950	8154000	28900	1280500
18/06/2013	7000	24962500	5100	12667000	51100	1048000	10850	3571500	6650	20225500	23700	7004500	1300	1,18E+08	17850	7696000	29500	2206000
19/06/2013	6850	31568500	5000	6403500	50550	662000	11000	3672000	6550	10154500	23300	4206000	1320	53516500	17800	8414000	29000	1268000
20/06/2013	6600	37902500	4700	13098000	48550	852500	10750	3421000	6450	13727000	22650	4044000	1230	63832500	17500	14300000	27550	2240500
21/06/2013	6350	72080500	4600	26771500	47700	1876000	10500	8180500	6300	22157500	22400	6507000	1190	94252000	16100	20008000	27250	4624000
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25/06/2013	6150	30500000	4400	13421000	45750	2461500	10350	5046500	6350	13588000	21600	3178000	1190	1,21E+08	15600	11278000	26000	3187000
26/06/2013	6500	50685500	4700	18394500	46150	1824500	11000	5636000	6900	14187500	23700	5229500	1320	1,12E+08	16350	14449000	28000	4091500
27/06/2013	6700	39563500	4875	12475500	48300	1833500	11350	4043000	7050	18381500	23000	4581000	1380	1,51E+08	16500	11388000	29400	6019500

28/06/2013	7000	50454500	5150	19447500	50600	2965000	12200	7877000	7350	21276500	24450	3983000	1440	98637000	17100	10494500	30750	4271000
01/07/2013	6850	21254500	4950	8229000	51300	1182000	12150	2094000	6850	8128000	23600	1296500	1390	35938500	16900	4803500	29550	611000
02/07/2013	6700	28314000	4700	11788000	50950	994000	11750	3584500	7000	11343500	22500	3686000	1440	55549000	17050	6170000	29950	1269000
03/07/2013	6550	22044500	4400	26254000	48550	788000	11500	4699500	7200	13511000	22200	3296500	1390	41287500	16000	12327500	28300	2642500
04/07/2013	6550	12946000	4350	9876000	49000	227500	10900	2483000	7050	6680000	22550	1701000	1380	37238500	15650	6682500	28200	777500
05/07/2013	6750	11788500	4475	7367500	49050	178000	11100	1352000	7050	8034000	22550	1354500	1440	39430500	15600	7848000	29300	1210500
08/07/2013	6500	26076000	4275	9003000	46500	1403000	10400	2277000	6600	10572000	21050	3339000	1330	46595000	15000	12690500	28000	1242500
09/07/2013	6500	17568000	4325	9868000	46500	600500	10450	3630000	6550	11625000	20850	3771500	1350	54016000	14850	13411500	27850	1094500
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11/07/2013	6600	48983000	4600	18417000	46550	1451000	10950	7017500	7000	16695500	22950	4325500	1430	61199500	15250	23574500	31650	3663500
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15/07/2013	6650	18965000	4700	5706000	45600	1015500	11150	2605500	7150	4454500	22600	3494000	1470	36280500	15000	12898500	31750	1748500
16/07/2013	6850	29972000	4700	7310500	45250	2592000	11000	1201000	7100	5542500	21900	4249500	1450	37525500	15000	10278500	31750	1902500
17/07/2013	6750	26930000	4700	3320000	46750	1466500	11250	4979000	7250	7999500	22350	2121500	1470	68390000	15050	7148000	32900	1287500
18/07/2013	6650	26688000	4800	6574000	47200	1446500	11250	5337000	7200	8443500	22600	3285000	1500	78985500	14750	17827000	33900	2702000
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22/07/2013	6550	7650500	4500	8532500	46500	644500	11100	1914500	7100	2469500	21700	2586500	1470	46243000	14500	6146500	33000	951500
23/07/2013	6700	17235000	4575	11910000	46000	1734500	11400	2359000	7100	6292000	22300	2307000	1480	50201500	15100	15685000	34000	1700000
24/07/2013	6600	22636500	4550	8357000	44950	2194000	11450	2970500	6700	16952500	22100	2762500	1420	67359000	15350	15106500	34000	2503500
25/07/2013	6600	21667000	4425	7980000	44200	2707500	11350	4185500	6700	7755500	21900	1759000	1400	1,39E+08	15300	7904000	32850	1781500
26/07/2013	6450	19944000	4275	11607500	43900	599000	11300	1116000	6700	5489500	21800	572500	1360	65393000	15350	4931000	32950	618000
29/07/2013	6300	18451000	4350	7012500	43000	882000	11150	1206500	6700	3862500	21200	2582000	1330	85499500	15100	4948500	31800	1620000
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31/07/2013	6500	24335500	4300	14974500	42350	1103500	11200	4525000	6500	14783500	20850	4225500	1430	60372000	15200	3801500	31800	1785500
01/08/2013	6750	34016500	4150	7623500	41600	1165500	11500	3068500	6750	5392500	21300	3426500	1450	63938000	15650	7986000	31950	1836000
02/08/2013	6700	28591500	4150	12157500	41700	785500	11550	1127000	6800	5087500	22250	4580500	1450	49812000	15900	7997000	31450	1912000
05/08/2013	6700	0	4150	0	41700	0	11550	0	6800	0	22250	0	1450	0	15900	0	31450	0
06/08/2013	6700	0	4150	0	41700	0	11550	0	6800	0	22250	0	1450	0	15900	0	31450	0
07/08/2013	6700	0	4150	0	41700	0	11550	0	6800	0	22250	0	1450	0	15900	0	31450	0
08/08/2013	6700	0	4150	0	41700	0	11550	0	6800	0	22250	0	1450	0	15900	0	31450	0
09/08/2013	6700	0	4150	0	41700	0	11550	0	6800	0	22250	0	1450	0	15900	0	31450	0
12/08/2013	6450	28760500	4050	5318000	40000	2141500	10900	3055500	6750	10144000	22000	3057000	1470	1,17E+08	15350	11698000	30000	2954500
13/08/2013	6600	10993000	4250	8286500	41000	1721500	11100	2362000	6900	3463500	21650	2278000	1460	72865500	15500	8225500	31350	2682500
14/08/2013	6750	14326000	4350	9709500	42700	1679000	11200	967500	6950	3427500	21500	1390500	1500	1,11E+08	15400	4049000	31250	1000000
15/08/2013	6500	35943500	4325	4056000	43600	1127500	11250	1237000	6850	3972500	21450	1570500	1470	43830000	15300	2817000	30700	1312000
16/08/2013	6300	36920000	4150	7765000	43450	674000	10850	2098500	6700	6452500	20850	2688500	1440	51252500	14800	10910000	30700	1001000
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21/08/2013	5900	27349000	3675	11191000	37500	2374000	9900	2356000	6050	10764000	19000	10449500	1340	49993500	13500	17866500	29500	1752500
22/08/2013	5900	28323500	3200	30871500	37150	1125000	9900	3427000	6200	15810500	19100	2610000	1300	80253500	13300	11433500	29750	1661500
23/08/2013	5850	18689000	3000	16521000	36000	1827500	10000	3067500	6250	9644500	19000	4532000	1340	57853000	13450	7609000	29000	1564000
26/08/2013	5650	10574500	2950	9654000	35500	431500	9900	985500	5900	18446500	18750	1862500	1300	35837000	12700	5297000	28300	991500
27/08/2013	5300	31201000	2750	16649500	34000	1660000	9200	10370000	5800	12386500	17900	5950000	1220	65450000	12050	18232500	27850	1441000
28/08/2013	5600	33662000	3075	22622500	35500	2156000	9300	3807000	5750	20462500	17750	5223000	1200	1,29E+08	12000	24920000	28000	1947500
29/08/2013	5850	60559500	3100	19817500	37450	1609000	10100	7281000	6200	12721500	18100	3346500	1310	82811500	12050	12905000	28350	2956000
30/08/2013	6050	56328000	3375	26795000	37950	1213500	10000	5657000	6500	11094000	19700	2711000	1350	99294500	12600	13171000	31200	4453500

02/09/2013	5900	31540500	3075	17023500	37650	1465500	9400	3366000	5900	16353500	18200	2592500	1300	52819500	12300	14786000	30600	1552000
03/09/2013	5900	16871000	3000	18659500	36850	473000	9650	2160500	5900	10314500	18700	2934000	1320	98576500	12450	5932500	31500	2950000
04/09/2013	5700	33617500	2850	23290500	35600	525500	9250	8127000	5950	4609500	18550	1463000	1260	1,22E+08	12300	6915500	30550	1068000
05/09/2013	5550	40340000	2575	25632000	36000	615500	9000	4251500	6000	7961500	18700	4819500	1290	1,1E+08	12350	17986000	31000	1298500
06/09/2013	5700	20629500	2750	18235000	37250	576000	9000	1912000	5950	6613000	19500	1570000	1250	56574000	12550	3762500	31900	2156500
09/09/2013	5850	18966000	3000	20259500	37950	628000	9650	4719500	6350	10925500	20250	2953500	1310	88987500	13500	11245000	32000	1843000
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11/09/2013	6200	36283000	3550	30169000	39950	1264000	9800	2872000	6650	9935500	19950	3803000	1350	67859500	13750	12696000	33000	2436000
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13/09/2013	6200	16660000	3800	11683000	41300	720000	10500	8543000	6500	6979500	19100	2338500	1350	53013500	13500	11352500	30700	1271500
16/09/2013	6900	61520500	3900	12722500	43300	1248500	11200	5881000	6750	8585500	20050	3904000	1370	75521500	14500	20201000	32150	2210000
17/09/2013	6750	46868000	3925	14171500	43000	1297000	11400	3316000	6850	12864000	20050	3488500	1340	50381000	14400	16658500	31500	2342000
18/09/2013	6750	28601000	3950	9817000	39750	2563000	11200	2137500	6700	3902000	19900	2573500	1320	56005000	14100	6180500	30750	1824000
19/09/2013	7100	97396000	4200	24523000	39750	4664000	11500	8707000	6850	14916500	21500	7898500	1350	1,31E+08	15200	18637500	31600	3761000
20/09/2013	6900	34479500	3550	46938000	39800	917000	10950	1379000	6950	4129000	20700	3306500	1360	88473500	15050	5902000	32000	1347500
23/09/2013	6850	21235500	3825	36415500	39250	1305500	10700	1604500	6950	5440000	20700	2719000	1360	66791500	15300	5645500	31950	1558500
24/09/2013	6400	46472000	3825	18037000	37150	2772500	10850	1868000	6700	6886500	20000	4789000	1320	1,19E+08	14650	13886000	31500	1542000
25/09/2013	6300	52809000	3750	9071000	37150	3565000	10250	2293000	6750	5206000	19100	6469000	1300	70016000	14300	11698500	31500	2036000
26/09/2013	6400	51757500	3775	8678500	36500	1108500	10200	2108000	6800	11789000	19000	5636500	1300	98500000	13900	17343000	30800	2060500
27/09/2013	6500	26349000	3850	6470500	36300	926000	10650	1426500	7050	12061500	19000	6859500	1300	62046000	13800	7967500	30950	1044500
30/09/2013	6450	37523000	3400	22096500	35000	1449500	10250	2018500	7050	18861000	18000	4841500	1180	1,05E+08	13000	18908500	30150	1969500
01/10/2013	6350	21550500	3600	11666500	35950	1483500	10450	1165500	7000	4268000	18450	2100000	1270	79467500	13300	9989500	30300	1327000
02/10/2013	6350	24583500	3650	10611000	35900	1107500	10600	1150500	6950	5964000	19100	4091500	1310	67757500	13300	7265000	31000	950500

03/10/2013	6450	20864000	3650	3763500	35650	440000	10800	1207000	6900	1584500	18950	1923000	1310	50185500	13500	4396500	30900	1028000
04/10/2013	6400	20334500	3600	2106000	35350	502500	10350	2044000	6700	2520500	18500	3915000	1310	40776500	12900	20232000	30700	1987500
07/10/2013	6350	18164500	3575	4956500	35050	809000	10350	1027500	6750	6060000	18700	2021500	1340	73820000	12800	7201000	30300	1219500
08/10/2013	6500	23023000	3675	6678500	35100	1530000	10600	3360500	6700	10837500	18950	2543000	1340	78290000	13150	10931000	30450	2143000
09/10/2013	6550	12789500	3725	7398500	34450	1488500	11050	5634500	6700	7175000	19350	4802000	1340	89450000	13600	8810500	30250	2731500
10/10/2013	6800	38531500	3625	6878500	34550	1429000	10950	3686500	6700	17313500	19500	3994500	1330	57151000	13850	9966500	30300	1880500
11/10/2013	6900	37758000	3725	5412000	34350	1728000	11100	3655500	7000	15534000	19900	5198000	1340	87927000	14250	11672000	30750	1817000
14/10/2013	6900	0	3725	0	34350	0	11100	0	7000	0	19900	0	1340	0	14250	0	30750	0
15/10/2013	6900	0	3725	0	34350	0	11100	0	7000	0	19900	0	1340	0	14250	0	30750	0
16/10/2013	7000	38918000	3725	5579500	33250	1799000	11200	3695500	6950	16115000	19500	3658000	1300	85601500	13950	9345000	30100	2995000
17/10/2013	6850	35620500	3850	10072500	33950	4441500	11150	3105500	7100	18284000	19250	3214000	1320	71657000	14250	9035000	30600	1456500
18/10/2013	6900	17450500	4000	13053500	33850	3308000	11000	2863500	7100	13971000	19950	1645000	1330	1,18E+08	14700	7050000	30800	927500
21/10/2013	6900	20809000	4125	10112500	36650	5722000	11150	4094000	7250	13004000	20100	3140500	1370	66897000	14500	8937000	31500	1308000
22/10/2013	6650	22800500	3975	7419500	37100	4830000	11000	1657000	7150	11154500	19500	2597500	1340	59533500	13950	7378000	30800	2630000
23/10/2013	6700	13674500	4025	15130500	36850	3497500	10950	2819500	7400	34939000	19900	2842500	1350	97295000	14150	10039500	31700	13208000
24/10/2013	6950	25357000	4025	7831500	37500	3171500	11050	2580500	7400	14122000	20500	3560000	1370	1,01E+08	14300	8388500	32150	1681000
25/10/2013	6950	28075000	3850	19414500	37450	1371500	11200	2352000	7400	5162000	20500	3171000	1360	35874500	14400	3423500	32050	825000
28/10/2013	6800	9105500	3900	7991000	38100	3237500	11400	3655500	7450	11350000	19950	1284000	1360	59701500	14300	2843500	32000	718500
29/10/2013	6800	12762500	3900	2603000	37450	2353500	11200	4810500	7300	16013500	20050	1067000	1330	96483000	14300	4785500	31800	1198500
30/10/2013	6900	16268500	3950	3890500	37700	2137000	11050	4024500	6950	22185000	21000	1741000	1330	78415000	14350	4151000	31250	2588000
31/10/2013	6650	25539500	3900	6491500	36900	1828000	11200	5034500	6650	23701500	20900	3999000	1300	78372000	14350	11097500	30000	3454500
01/11/2013	6500	39496000	3675	8052500	36100	2496000	10800	3737000	6500	11625500	20000	3097500	1270	70871500	13900	6742500	29800	2403500
04/11/2013	6450	20388000	3650	7395000	35300	2034000	10850	989500	6550	6731000	20250	1166500	1300	68555000	13950	4371000	29850	1075500

05/11/2013	6450	0	3650	0	35300	0	10850	0	6550	0	20250	0	1300	0	13950	0	29850	0
06/11/2013	6550	22046500	3850	9640500	35000	2683000	10850	2346500	6650	9873500	19700	3949000	1310	73232500	13900	17870000	30800	1794500
07/11/2013	6700	25217000	3875	11570500	34850	2332000	10900	1690000	6750	13678500	20000	3741500	1340	1,19E+08	13850	8868000	30200	726000
08/11/2013	6700	17275000	3975	14797500	35600	1933000	10900	1555500	6700	6494000	20200	2096000	1330	1,01E+08	13600	12779000	30150	995000
11/11/2013	6750	24385000	3850	11569500	36850	1900000	10650	2903500	6500	9967000	20050	2517500	1300	88276000	13500	13089500	29800	1401000
12/11/2013	6600	25568000	3775	5571500	37000	2490000	10300	3074000	6250	14720000	19400	5106000	1290	52147000	13450	7072500	29800	1328000
13/11/2013	6350	28635500	3625	5554500	37400	2356000	10000	5180000	6450	18347000	19050	5818000	1280	66078500	12900	9848000	29600	1253000
14/11/2013	6450	20655500	3725	3861000	38000	1775000	10250	1788500	6550	6994000	19150	3035500	1300	39015500	13050	3800000	29900	885000
15/11/2013	6300	24868500	3625	9567000	38000	945000	9950	3271000	6600	5620000	19000	1848500	1280	69205000	12950	7561500	29000	1574500
18/11/2013	6650	25714500	3775	7024000	38000	825000	10350	3478000	6700	5620500	19450	1043500	1300	30625500	13150	3450500	29500	953500
19/11/2013	6750	29579000	3750	3887500	38050	1448500	10150	5091500	6750	10889000	19350	2632000	1290	34810000	13250	2700000	29200	1168000
20/11/2013	6550	27081500	3725	9057500	37700	2174500	10400	8581500	6750	5968500	19000	3062000	1280	31571000	12900	12189500	28700	2060500
21/11/2013	6700	18807000	3750	8156500	36850	1133500	10250	3005500	6650	10070500	19200	2160500	1260	71881000	12900	7619500	27550	4899500
22/11/2013	6600	13101000	3725	3447500	37150	1808500	10300	800500	6600	4024000	18600	2619500	1280	35275500	12950	8474500	27450	1998500
25/11/2013	6550	15837500	3750	5554500	36050	744500	10300	393000	6500	2267500	18250	3529000	1250	27629500	12850	3707000	27800	704000
26/11/2013	6300	51243500	3550	13903500	36000	1686000	10250	3630500	6650	15957000	18900	3306500	1260	64063000	12600	24205000	26000	13490000
27/11/2013	6300	32594500	3550	5566000	36400	1097000	10000	6244000	6700	6623000	18900	2930000	1230	45309500	12900	6114000	26700	4144000
28/11/2013	6300	25902000	3525	3346500	36450	948500	9900	1626000	6650	3336000	18950	1444000	1220	40760000	12850	4764500	26650	1507000
29/11/2013	6250	29525000	3400	6442000	37000	544000	10000	3318000	6650	2760500	18850	1010000	1220	28985500	12800	3874500	26600	1429500
02/12/2013	6400	24308500	3550	5889500	38800	3492500	10200	2420000	6700	5287500	19200	1242500	1240	73590500	13150	7532000	27050	2288500
03/12/2013	6350	12479000	3475	5445000	39350	3982000	10200	898500	6650	6254500	19100	1112000	1220	28724000	13050	7306500	26250	2617000
04/12/2013	6250	20264500	3400	5560000	38500	1664000	9900	1235500	6600	7497500	18800	3229500	1220	57758500	12800	6048000	25800	2143500
05/12/2013	6150	38709000	3350	9012000	39600	1199000	9900	1341000	6500	7298000	18650	1378500	1220	45004000	12750	8990500	25500	2207000

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09/12/2013	6300	21130000	3300	3179000	39000	1193500	9800	4097500	6700	9281000	19000	1293000	1180	59422000	12800	3248500	26250	2861000
10/12/2013	6550	27231500	3450	10977000	40150	1750000	10200	3074000	6800	13453500	19650	3633000	1230	89716000	13150	5586500	26800	1832000
11/12/2013	6450	15145500	3450	7715500	41400	3699000	10050	2888000	6700	9176000	19400	2173000	1220	72413500	13250	7705000	26600	1569500
12/12/2013	6300	12941500	3325	5184500	40000	2260500	10000	1104000	6500	8460500	18900	2922500	1200	49538000	13050	4084000	26500	1808000
13/12/2013	6100	32394000	3200	10087000	39400	1875500	9900	1339500	6600	7856500	18900	2077000	1190	47824500	13000	5248500	25950	1378000
16/12/2013	6100	13463500	3125	6228000	38600	567000	9850	722500	6500	10101500	18350	1543500	1200	55327000	12900	2904000	25750	872000
17/12/2013	6200	24311500	3275	11933000	40600	1748500	10050	2191500	6600	10414000	19250	3081000	1200	80432500	13150	5413000	26000	2341500
18/12/2013	6250	17598000	3250	7729000	41150	1259500	10150	1616000	6600	16416500	19800	2118000	1210	52635000	13500	10182000	25900	2171000
19/12/2013	6500	23872000	3300	10188500	41700	1805000	10200	2096500	6550	12610500	19900	2740500	1250	68549000	13900	12562500	25900	1319500
20/12/2013	6400	20854000	3400	8661000	41900	939000	10050	2143000	6450	6246000	19750	2824500	1200	38789500	13950	9972000	26000	1753500
23/12/2013	6450	14792000	3325	3707000	41550	751500	10150	2375000	6450	3206500	19700	2269000	1200	55388000	14000	5779000	25550	1319500
24/12/2013	6600	12111500	3350	2380000	41250	166000	10100	298000	6500	1000000	19750	576000	1220	19998500	14000	2268500	26100	1006000
25/12/2013	6600	0	3350	0	41250	0	10100	0	6500	0	19750	0	1220	0	14000	0	26100	0
26/12/2013	6600	0	3350	0	41250	0	10100	0	6500	0	19750	0	1220	0	14000	0	26100	0
27/12/2013	6600	11625500	3375	6249500	41250	527000	10150	466500	6450	5641000	19850	1222500	1240	19654500	14050	3758000	26600	1562000
30/12/2013	6800	37858500	3375	10335000	42000	1202500	10200	1060500	6600	5978000	20000	736000	1250	55130000	14150	5963000	26000	2106000
31/12/2013	6800	0	3375	0	42000	0	10200	0	6600	0	20000	0	1250	0	14150	0	26000	0
01/01/2014	6800	0	3375	0	42000	0	10200	0	6600	0	20000	0	1250	0	14150	0	26000	0
02/01/2014	6950	14603500	3525	4980000	42750	558000	10450	1281000	6700	1940000	20350	1306500	1320	60703000	14500	8747000	26800	1235000
03/01/2014	6750	18566000	3400	7189500	42500	973000	10200	1128500	6700	6471000	20000	2557500	1320	70481500	14350	7100500	26500	1763500
06/01/2014	6850	29776200	3380	5757600	42500	797300	10125	1600800	6675	3571300	20325	2239000	1310	52434900	14300	11507800	26750	1271500
07/01/2014	6825	26433200	3300	5678800	42875	999500	10100	3922100	6625	5572200	20200	1760000	1285	90904000	14275	4410800	26200	1411100

08/01/2014	6800	19343900	3375	3621500	42050	1300500	10075	2387600	6700	6745300	20200	1776400	1300	74119900	14125	5729600	26200	2076300
09/01/2014	6775	23481000	3445	6190900	41900	1689500	9975	2864100	6575	6128600	20225	2475100	1330	68301200	14100	3619900	26075	1854900
10/01/2014	6750	22086800	3550	11283900	42500	2859700	10000	2212700	6675	7651400	20875	2548300	1370	77017300	14900	11029900	25900	2358100
13/01/2014	7000	33263200	3805	12796900	42600	1438000	10150	3754300	6725	11008500	21950	9535700	1430	1,55E+08	15525	18980800	27025	3504800
14/01/2014	7000	0	3805	0	42600	0	10150	0	6725	0	21950	0	1430	0	15525	0	27025	0
15/01/2014	7300	56714000	3930	13224400	44025	1897700	10750	6886600	6675	10759300	21950	2999800	1430	1,21E+08	15675	7920100	28025	5496600
16/01/2014	7300	27017400	3935	5497800	44800	1681400	10850	6248600	6725	8321400	21625	1977300	1400	55206400	15200	4040100	27800	2206200
17/01/2014	6925	49480500	3915	3997400	45000	545900	10925	1697800	6675	6225500	21900	931800	1390	42055100	15200	5307400	27650	1114600
20/01/2014	6825	24099600	3910	2713800	45350	566900	10975	1636300	6750	2849500	21625	1099300	1405	50255000	15075	820100	28050	885600
21/01/2014	6750	16751900	3925	1744500	45000	857500	11100	1616600	6775	5653700	21450	1672400	1410	74308700	14975	3679300	28150	739800
22/01/2014	6800	34666100	4030	10580800	44825	585500	11600	7449300	7175	33180900	20825	3439900	1415	59501600	14675	7891800	28500	2735500
23/01/2014	6800	24660500	3940	6886100	43525	796900	11300	3431700	7275	23596100	21275	3551700	1410	42622900	14900	12021100	28575	2237000
24/01/2014	6525	51920700	3885	9489900	42150	1933200	11200	2232200	7275	11041400	21300	3478000	1410	44321500	14550	6307300	28075	1918100
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28/01/2014	6375	35519100	4000	14279100	41000	2432000	10675	3784000	6950	8509500	21250	4081300	1405	62205900	14000	5896900	27700	2265200
29/01/2014	6425	48344200	4075	21611900	42175	1927400	11200	2832800	6925	10223800	21775	4193400	1420	85964800	14400	7763200	28500	2821200
30/01/2014	6425	50615900	4135	12809100	41900	694000	11000	3465300	6975	6115700	22400	2160600	1405	38329400	14200	9642300	28550	3520000
31/01/2014	6425	0	4135	0	41900	0	11000	0	6975	0	22400	0	1405	0	14200	0	28550	0
03/02/2014	6350	24496000	4030	4452100	41750	420200	10725	3902300	6925	3630500	21450	2240800	1385	43227900	14000	6971000	28400	2034900
04/02/2014	6250	31151000	3960	7110300	42600	931200	10775	4897500	6825	6228600	20900	1603400	1410	65030400	13875	8607400	27850	1761700
05/02/2014	6375	22449600	3905	5981800	43350	1363600	10975	1481400	6875	3761600	21250	2221000	1410	48172600	14425	10301900	28125	1556000
06/02/2014	6400	24377800	3920	6788500	44350	1144800	11100	1761900	7025	8175500	21225	3696400	1420	45504500	14550	6156100	28200	2840300
07/02/2014	6525	45661900	4000	7307000	43900	805800	11150	3415200	7050	5762300	21500	2177300	1415	42376400	14950	11853600	28225	1608500

10/02/2014	6500	28504500	3840	9811800	44500	1133200	11100	2023100	7050	6808200	21725	4188400	1400	80097900	15075	9890500	28100	1020800
11/02/2014	6575	17430500	3895	5408500	44500	738300	11050	3076300	6900	6698800	22050	3903800	1400	44154200	15100	7367500	27600	3075700
12/02/2014	6650	38309400	3935	6228400	44450	322800	10950	2274400	7000	7176500	22400	3604600	1410	52326900	15100	5230600	28000	751200
13/02/2014	6650	29030900	3925	6234700	44350	1073200	10925	2373400	6975	5190700	22350	1520300	1390	64907200	15100	8479800	28125	924400
14/02/2014	6700	27986800	3950	3912800	43650	1137700	10875	1938700	7000	2213900	22200	1264100	1395	29641200	14850	6074100	28375	1809200
17/02/2014	6825	52551700	4010	11567000	43650	1183700	10800	5662300	7025	5322700	22425	2997200	1405	92159700	15225	11717000	28375	1613300
18/02/2014	6800	28768000	4000	12709500	45500	3978800	10700	4595900	7000	1814000	22450	1516800	1395	78507100	15000	5580900	28075	765100
19/02/2014	6950	40294200	4000	6471200	46750	3520800	10800	4019200	7000	8366500	22650	2398000	1420	98338000	15000	7283600	28400	1241500
20/02/2014	6900	42230600	3995	4301400	46600	1380900	10775	6267900	7000	8700400	22650	1327400	1440	64704500	15100	5520400	28300	1323400
21/02/2014	6975	39134100	4050	9421800	47900	1232300	10900	4954400	7050	5059300	22775	1321800	1470	82336800	15075	3941900	28400	1892800
24/02/2014	6775	33404200	4170	12285300	47850	571700	11200	4633200	6975	4710200	22250	1546700	1460	34501000	14900	5200700	28375	772400
25/02/2014	6700	49663500	4185	11081600	47000	1305600	11250	4743600	6975	5566600	21900	1847400	1435	23301700	14650	6913000	28400	1219500
26/02/2014	6550	41094000	4130	9972200	46900	985700	10900	2826100	6950	9550300	21175	3438300	1400	64955600	14375	7776400	28025	1807600
27/02/2014	6700	36171900	4200	7117300	48200	760500	11000	1674300	7025	4008600	21725	1711800	1400	61992300	14450	5979600	28025	1516700
28/02/2014	6950	95332900	4235	9806500	47700	1257100	11175	2891000	7175	34222800	22450	4409200	1450	55523000	15000	10173400	28575	2642600
03/03/2014	6800	27773000	4170	5014400	47350	940700	11125	3563900	7150	7955600	22000	1696200	1430	31636100	14700	5080100	28275	780200
04/03/2014	6825	32191400	4135	11138400	47500	630900	10925	5059500	7125	9724800	21800	2088500	1430	57131000	14700	5626500	28025	1575800
05/03/2014	7025	54110600	4180	11680900	47875	897100	10950	2083100	7225	19835800	21950	1239100	1430	29295700	14875	9589500	28125	1558800
06/03/2014	7025	23145400	4165	9863400	47000	1684000	10925	2033800	7400	20671000	22050	1115400	1420	46832400	15100	6386500	28300	1183800
07/03/2014	7000	34527600	4195	9865100	47200	497800	10900	3776600	7425	11366500	22500	2873400	1425	32015500	15300	14511800	28125	1292500
10/03/2014	7275	94212200	4200	10202800	47350	586300	10875	2004500	7400	6726900	22800	3798500	1415	23179200	15300	6753900	28250	848000
11/03/2014	7250	37634400	4205	7697300	47050	559800	11000	2259800	7500	19553000	22700	2785600	1420	59095500	15450	7885600	28475	1837000
12/03/2014	7225	25901000	4190	6988600	47025	673700	11000	2093200	7550	11699000	22200	1455600	1415	52543200	15125	5531100	29000	4321500

13/03/2014	7275	25780400	4200	7901700	48450	888000	11025	3490800	7700	19130500	22200	2826100	1445	1,06E+08	15100	5830200	30300	4828700
14/03/2014	7800	1,16E+08	4300	15551600	49000	1637500	11100	3907700	7750	10767900	24000	9773800	1475	1,31E+08	16000	24358000	30875	3095900
17/03/2014	7925	1,43E+08	4350	21239900	48275	1015800	11150	6072700	7675	11899600	24500	10097400	1490	1,42E+08	16500	47918900	29725	2769500
18/03/2014	7700	73445500	4295	10814600	47175	1040500	10850	5340700	7500	9165600	24000	5794200	1460	56993400	16075	16789700	28975	3249800
19/03/2014	7875	48624200	4190	8569400	46550	1586800	10825	3063100	7475	11627200	24050	3858100	1420	69405800	16000	9317000	28900	2154500
20/03/2014	7550	47176300	4055	14315600	45450	1967900	10800	4214600	7225	16617900	23150	5169300	1415	42116200	15300	13326800	28125	2169800
21/03/2014	7350	66302100	4135	14192700	46100	4380500	10975	2465300	7325	9641400	23550	3534200	1425	1,04E+08	15400	9359600	28125	2767400
24/03/2014	7275	51606500	4205	6233500	46250	1268100	10200	17773000	7050	10399800	24200	4279100	1450	51927500	15750	6542400	28300	1482400
25/03/2014	7250	45878000	4160	5333100	45100	2260900	10000	8911200	7025	11650700	24225	1403600	1445	29924300	15750	2197500	28250	1050700
26/03/2014	7300	38008600	4090	4842800	47500	1695400	10050	8109000	7075	13924900	24200	3391800	1465	50212700	15700	3196900	28725	1692900
27/03/2014	7250	51398100	3995	14264200	49150	2142000	10150	7047200	7250	12347400	23800	2544400	1475	73103400	15700	8145100	28700	2300700
28/03/2014	7375	55907200	3995	14528800	49400	1626500	10100	4855600	7300	13483800	23375	5132100	1465	88255400	15800	5609300	29250	3162000
31/03/2014	7375	0	3995	0	49400	0	10100	0	7300	0	23375	0	1465	0	15800	0	29250	0
01/04/2014	7675	60144400	4150	13117200	50900	2965600	10075	10917700	7425	18165200	23800	10728100	1505	1,07E+08	16500	15970600	30000	3777100
02/04/2014	7725	34822500	4110	5169400	51475	2582300	10000	7493000	7400	13399700	23900	4171300	1495	32012500	16600	6576500	29925	1982600
03/04/2014	7800	41887000	4100	6511300	50500	1485200	10050	4185600	7300	11014300	24325	7919000	1505	46009300	17000	9454500	30000	2283900
04/04/2014	7800	30022900	4020	5420100	48900	944800	10000	3993500	7150	13450000	24150	3626600	1500	54224200	16625	8773300	29400	831800
07/04/2014	8000	78389600	4210	14563200	50200	1698200	10075	4680700	7225	9005200	24950	5270100	1525	66793700	16850	11366700	29950	2125900
08/04/2014	8025	51386700	4250	12716500	50750	1447100	10000	11220000	7175	11591600	24950	5224000	1510	72955700	16800	13705400	29675	1600400
09/04/2014	8025	0	4250	0	50750	0	10000	0	7175	0	24950	0	1510	0	16800	0	29675	0
10/04/2014	7525	1,26E+08	4110	8549100	49200	1771000	9925	10387700	7025	19043000	22725	13739000	1510	1,05E+08	15675	29086500	29550	2002400
11/04/2014	7675	53088900	4200	5546700	49000	903900	9925	5278600	7200	6818900	22600	6240400	1510	59774600	15325	16923800	30525	2351900
14/04/2014	7700	33610600	4215	4450500	49600	585400	10000	2055800	7225	4566400	22950	3389000	1520	55249700	15925	12318500	30750	1377800

15/04/2014	7725	36950300	4255	3693800	49400	513800	10050	4475300	7150	5664200	23400	3855400	1515	89254100	15925	12586400	30675	1013300
16/04/2014	7750	27122000	4190	5377300	49150	441900	9975	6477000	7050	19566400	23425	1596100	1535	62584500	15950	4933500	30100	1094700
17/04/2014	7825	39267300	4210	2968700	50600	1035200	9975	8731500	7200	6386300	23450	2195700	1545	49387800	15825	7961500	30800	1213500
18/04/2014	7825	0	4210	0	50600	0	9975	0	7200	0	23450	0	1545	0	15825	0	30800	0
21/04/2014	7900	20496000	4185	1162200	50600	750400	9975	2080700	7175	4496200	23000	1779900	1515	25649000	15775	2058600	30700	549200
22/04/2014	7850	35880000	3935	3305360	51875	1136900	9975	2344800	7225	5440700	22775	2454600	1540	58260900	15700	7127500	30825	994400
23/04/2014	7900	38386300	3870	1877270	52500	2049100	10000	3319700	7150	5534300	22600	3458600	1550	34446100	15700	7846100	29975	863200
24/04/2014	7950	32251900	3900	1342530	54550	2744800	10000	2693800	7200	7079600	22325	1650300	1540	33723100	15525	1161810	29300	2412100
25/04/2014	7875	26516100	3950	7804600	54550	2536200	9975	4198000	7150	6367300	22600	1814700	1545	33733000	15700	9516200	29025	1907700
28/04/2014	7600	49468100	3850	9859900	55050	1352900	10000	6705600	7000	16204400	22275	2763800	1530	39235700	15425	1010710	28575	3032600
29/04/2014	7475	64571000	3825	8489200	55750	1075800	10000	4256900	7025	10008400	21875	4040900	1525	37973500	14975	9566200	29000	1564600
30/04/2014	7425	73993900	3770	1154940	56500	3107400	10000	2363700	7050	15409100	21950	5385000	1545	66244200	14850	1316510	29250	1305000
01/05/2014	7425	0	3770	0	56500	0	10000	0	7050	0	21950	0	1545	0	14850	0	29250	0
02/05/2014	7425	39628800	3700	5195100	57300	1904300	9975	816300	7050	4726700	21450	5211300	1560	75788700	14600	1291800	29200	753000
05/05/2014	7425	17152600	3735	5255700	57800	1255100	9975	1327300	7025	4341800	21375	2416300	1560	13780400	14675	1028460	29725	1300600
06/05/2014	7400	12741800	3950	1492180	55850	1488400	9975	3134700	7025	3317300	21450	2083400	1555	27166700	14525	1064650	29375	400400
07/05/2014	7500	37935900	3945	6375200	53500	3419000	10000	3362500	7025	10866500	21425	3658600	1545	31613900	14275	2142630	30225	1886100
08/05/2014	7475	23525300	3950	9300200	54000	1803300	9975	2577700	7025	11869700	22075	1841000	1550	27026800	14700	2158020	30400	1207000
09/05/2014	7475	16071700	3980	5999100	56000	1558200	9975	1398100	7050	4762800	22000	2115200	1560	24944700	14800	1102050	30750	1600700
12/05/2014	7500	23384100	3865	1502150	55500	1040000	9950	3555000	7075	10655400	23000	4017600	1570	20623000	15600	2154890	30575	1723600
13/05/2014	7425	46420600	3865	4882500	56300	697700	10000	1368800	7050	11340800	22775	1940000	1550	17181700	15600	9578900	30200	1311400
14/05/2014	7575	51446300	3940	1140590	56900	1295900	10300	5954500	7050	18141400	23975	7108900	1605	59456200	15950	1517650	30800	1970900
15/05/2014	7575	0	3940	0	56900	0	10300	0	7050	0	23975	0	1605	0	15950	0	30800	0

16/05/2014	7675	52781900	4000	9208200	57025	1255200	10325	3657100	7100	18877900	23875	6298900	1610	52103800	15950	10795100	30800	1915500
19/05/2014	7700	86604500	4000	8639500	57000	764400	10225	5311000	7025	22556200	23100	5546800	1630	63062500	15275	21465900	30500	2095800
20/05/2014	7500	68868600	3855	7184000	55000	2085800	9975	5676500	6775	26241900	23000	5376100	1650	59755900	14850	15437600	29600	3661700
21/05/2014	7500	33823700	3810	6158900	53550	1800200	10050	2378400	6750	18794300	23075	1698500	1610	34095300	14975	9513000	30000	1869700
22/05/2014	7600	37867700	3895	8078200	53500	2029700	9975	2304800	6775	21590400	23300	2636400	1615	35443100	14950	9012100	30025	1389100
23/05/2014	7500	34145700	3930	11076800	53500	1027700	10200	2540100	6700	22583400	23450	3097600	1630	23009500	15025	4254100	30025	1029100
26/05/2014	7450	12078300	3965	10432100	53525	258700	10175	379900	6775	6575700	23500	1014900	1630	25104300	15000	2955800	30125	526400
27/05/2014	7450	0	3965	0	53525	0	10175	0	6775	0	23500	0	1630	0	15000	0	30125	0
28/05/2014	7450	16619800	3995	12079700	53950	695300	10275	2476600	6800	10813200	23625	1850300	1615	25206800	15225	8229700	30200	875200
29/05/2014	7450	0	3995	0	53950	0	10275	0	6800	0	23625	0	1615	0	15225	0	30200	0
30/05/2014	7075	93936600	3775	16514500	52050	1518700	10200	3073500	6825	16233500	22650	4584800	1540	1,65E+08	14725	12470100	29125	3309200
02/06/2014	7225	46880400	3800	4274600	52000	1414300	10075	1372500	6875	10109800	22900	904700	1595	37141700	14850	3303900	29750	1094300
03/06/2014	7225	24445300	3810	8500800	53500	1088500	10075	6787500	6950	9861700	23150	2797200	1580	61864400	15050	6527400	30050	1510700
04/06/2014	7175	26784500	3810	3138600	53800	449500	10200	1878400	6900	7472000	23175	2455000	1585	33327900	15100	5436000	30275	1165700
05/06/2014	7150	32882100	3840	2342900	53600	366700	10100	1490000	6850	8278100	23100	887500	1585	19784900	15200	5653900	30450	1157800
06/06/2014	7200	30170400	3840	3252000	54250	394100	10100	2991800	6800	9328800	23600	1402600	1605	31509100	15325	5776200	30475	581500
09/06/2014	7225	22738200	3755	5805900	54250	843200	10025	1163100	6800	6422900	23150	999800	1605	32878600	15000	8005100	29975	935600
10/06/2014	7400	35546400	3810	5746700	54900	667500	10200	1373000	6850	11451600	23650	1825300	1670	46402500	15250	4337800	30200	810500
11/06/2014	7525	47184700	3935	7007600	54900	669300	10200	2189600	6900	7756100	23825	1561600	1670	48445200	15350	5032000	30475	1096200
12/06/2014	7450	18495700	3940	5818000	54025	415400	10200	1450200	6875	5955900	24425	3959600	1630	30222800	15400	6991100	30000	2010900
13/06/2014	7400	14741200	3895	2070400	53600	359400	10225	906700	6875	5418800	24850	5684100	1610	23941700	15425	3951400	29800	1606400
16/06/2014	7250	21576400	3865	2076400	52975	587800	10000	2417500	6800	7481800	24525	1776100	1600	23402700	15375	4097400	29650	2397800
17/06/2014	7225	34344200	3890	2652200	53025	884000	10000	1843200	6825	4563200	24950	3161900	1645	33498400	15425	8783200	29500	1312400

18/06/2014	7175	19613100	3895	4429200	53000	627100	10000	1593500	6825	8430800	24200	4706200	1635	27058300	15200	6845800	29400	1603000
19/06/2014	7150	35026000	3860	3371300	52675	890400	10100	2043400	6825	9206100	24250	1946200	1600	32098500	15000	6802300	29550	2881400
20/06/2014	7150	22344100	3900	6881500	52600	538600	10100	1369300	6825	10185200	23350	3472800	1620	27618200	14925	5946300	29875	2630400
23/06/2014	7225	28518300	3845	2199100	52700	378100	9975	1043800	6825	1872800	23100	4401100	1645	21027900	15000	10743500	29800	1925900
24/06/2014	7275	13453500	3845	2082100	53500	222900	10000	1445300	6825	5846800	22900	787700	1660	43364400	15000	6247500	29700	1033500
25/06/2014	7200	9382800	3820	2402900	52000	519000	9975	1393400	6775	6488600	22575	1670900	1660	23771100	15000	5500900	29700	584300
26/06/2014	7225	17606000	3860	5104600	52975	762600	10000	848800	6825	7647600	22600	2593300	1670	22400900	15100	7240200	29800	3301600
27/06/2014	7350	26551700	3765	7201900	52950	438900	9900	1668700	6800	6838800	22500	2448700	1660	22631400	14975	7339000	29475	1241600
30/06/2014	7275	47355400	3770	5151400	53500	628900	10000	1003200	6700	17129600	22550	3368300	1660	36964300	15075	4708600	29275	2040600
01/07/2014	7350	6243700	3760	2045500	53100	359800	10075	449300	6750	4915700	23000	1642600	1685	50647900	15075	3147300	29750	728800
02/07/2014	7450	21128900	3820	4879700	52750	827600	10225	6415000	6825	5126800	23150	1419700	1695	69666700	15075	5800900	30325	671500
03/07/2014	7350	11313100	3840	5398000	52550	461900	10150	2516400	6825	4123800	23075	1879600	1695	32628700	15025	3911900	30200	1579200
04/07/2014	7350	23581400	3785	4187900	53275	804300	10075	740200	6800	4543600	23375	2563400	1685	59698600	15125	8951500	30300	1050200
07/07/2014	7500	63667100	3895	8020500	53400	933000	10225	2969300	6900	11264000	25000	8426200	1695	54468600	15925	13175500	30900	2350200
08/07/2014	7650	87554500	3875	7249200	53225	762200	10225	1763200	6900	14840000	25000	4021600	1715	57462500	16200	21122200	31225	3195800
09/07/2014	7650	0	3875	0	53225	0	10225	0	6900	0	25000	0	1715	0	16200	0	31225	0
10/07/2014	7825	1,27E+08	3875	12718500	53800	1439000	10350	8992100	7075	29977800	25500	18198300	1745	1,32E+08	16725	33956400	31400	7052500
11/07/2014	7550	37434700	3845	4485800	52475	842200	10075	2474900	7100	20559500	25725	4263600	1735	54144100	16650	9997700	30400	2953200
14/07/2014	7500	18227400	3840	5023400	52750	628400	10025	1089100	7050	10301700	25625	2001700	1700	81621300	16650	5684100	30400	1072900
15/07/2014	7600	31727900	3855	5138700	53050	632500	9975	3174700	7050	8744300	25850	2478600	1725	38209600	16925	5091700	31375	2044000
16/07/2014	7600	42710200	4055	23750600	53700	1694500	10500	18516600	7075	17407500	26100	4833200	1790	1E+08	17050	9306600	31250	2227300
17/07/2014	7600	29379100	3980	10735900	53550	1734000	10500	7653600	6975	10091100	25650	2839500	1735	56172200	16550	7743800	30900	2947200
18/07/2014	7650	12961700	3970	5486500	53950	450700	10475	1170400	7075	7895100	26000	2253700	1720	79102500	16700	4880900	30925	1338100

21/07/2014	7725	24677800	3975	6290700	54000	446100	10500	7489700	7050	6633100	26450	4677800	1745	54775900	16975	10260900	31100	2000300
22/07/2014	7725	76254600	3925	9067700	54000	777600	10450	4950900	7000	15215500	26250	5552300	1740	59843300	16625	9244900	31200	2011400
23/07/2014	7700	34142300	3970	6396500	53500	954900	10525	2710800	7050	7495200	26125	5410300	1760	38258900	16875	6811900	31225	1246400
24/07/2014	7675	26020700	3990	4491000	53150	464000	10475	801300	7075	6567500	25600	1940700	1750	36229900	16650	6170300	31150	917900
25/07/2014	7725	32370900	3950	7681800	54200	185740	10450	1216800	7075	7128700	24950	3651700	1730	71385200	16575	7066000	30750	2262500
28/07/2014	7725	0	3950	0	54200	0	10450	0	7075	0	24950	0	1730	0	16575	0	30750	0
29/07/2014	7725	0	3950	0	54200	0	10450	0	7075	0	24950	0	1730	0	16575	0	30750	0
30/07/2014	7725	0	3950	0	54200	0	10450	0	7075	0	24950	0	1730	0	16575	0	30750	0
31/07/2014	7725	0	3950	0	54200	0	10450	0	7075	0	24950	0	1730	0	16575	0	30750	0
01/08/2014	7725	0	3950	0	54200	0	10450	0	7075	0	24950	0	1730	0	16575	0	30750	0
04/08/2014	7900	64681200	3945	8267800	54400	1368500	10600	7391400	7175	9912900	24350	5983000	1655	2,24E+08	16725	14370200	31475	2045700
05/08/2014	7800	20244800	3965	3588900	54600	874700	10550	5483600	7075	7309800	24250	2425300	1635	1,59E+08	16500	4980900	30900	1367800
06/08/2014	7625	50787700	3950	3588900	54300	729700	10350	1601100	7050	7144800	24250	2964700	1595	2,08E+08	16400	4342900	30750	1042700
07/08/2014	7675	29075800	3875	7150300	53300	734100	10475	1338900	7000	8834700	24425	4554500	1630	1,68E+08	16350	5788100	30775	1306100
08/08/2014	7550	12435700	3860	4133100	52950	463700	10350	1761300	6975	4590000	24200	1563500	1630	1,06E+08	16250	5556100	30500	491900
11/08/2014	7650	18998600	3965	5967800	53975	355400	10375	2506400	7075	5624100	24500	6326700	1640	69999400	16575	6163600	31250	720400
12/08/2014	7650	10445800	3985	5065000	54400	898000	10375	1880000	7100	5157500	24575	4162500	1640	64061100	16650	5295200	31350	835400
13/08/2014	7725	18753300	4070	11500300	55050	1433600	10500	3885300	7125	6771600	24600	3816200	1630	74609200	16725	3087300	32000	1651800
14/08/2014	7725	21340100	4030	4353800	55000	634100	10450	2612000	7150	5091300	24600	2813500	1630	47963900	16450	3932600	31975	1560300
15/08/2014	7650	18572200	4070	7877600	54400	414900	10475	251500	7100	2613100	24650	1648000	1615	41121300	16475	3104500	31900	226200
18/08/2014	7675	11680600	4035	5160000	54500	318900	10450	1554900	7125	5302800	24650	1112000	1630	39680800	16650	5595700	31500	571900
19/08/2014	7675	15837700	3940	8591500	54500	228300	10225	2632500	7000	6954800	24600	2577000	1640	57586400	16675	6224000	31450	1193700
20/08/2014	7725	15668300	4005	6019400	55000	366000	10275	1153400	7075	4337600	24550	2947600	1680	75614500	16600	6204200	31900	478800

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22/08/2014	7725	13100500	4030	4978100	55500	701900	10100	1647500	7100	4190800	25350	4453400	1690	44281900	16800	5621700	31600	1454000
25/08/2014	7625	10671200	4035	2556800	55025	404800	10300	3026800	7075	3818600	25150	1936700	1675	35193600	16775	3823900	31500	594100
26/08/2014	7600	27144600	4035	6832800	53700	631000	10275	2451900	7000	15680300	24400	3958200	1665	47183700	16450	7844000	31675	1684100
27/08/2014	7600	24837700	4030	4886400	54800	623900	10500	14990500	6950	16168100	24475	3588900	1665	46944200	16250	8155200	31950	1064700
28/08/2014	7675	17140300	4050	5576600	54600	251300	10550	5261000	6950	14768300	24475	1357100	1680	28893900	16400	4390300	32100	1276900
29/08/2014	7575	27307900	3845	7601200	54000	692600	10500	3417100	6875	10824700	24250	1349600	1660	39453200	16225	6057500	31025	1780700
01/09/2014	7625	10311300	4030	6862300	55025	760300	10900	6112400	7025	10715800	24125	1410600	1680	23572400	16250	4760400	32000	838700
02/09/2014	7725	12307300	4045	2943500	55500	372500	10900	4433800	7025	5669400	24450	3160600	1675	18344500	16275	7053800	32000	575400
03/09/2014	7675	8153700	4050	5399200	55000	540300	10950	3275000	7075	4708300	24600	1573400	1685	34303500	16425	3462200	32000	420400
04/09/2014	7550	27555400	4050	4175600	55075	1168900	10900	1449400	7025	6623100	24225	2591500	1680	44548300	16250	4982100	31675	1145300
05/09/2014	7650	24010300	3985	3528000	55000	562000	10900	744700	6975	12305000	24100	3425400	1680	23023400	16375	4098000	31825	1079400
08/09/2014	7575	38393700	4015	1716700	55300	636900	10975	1351300	7000	9283600	24525	2049300	1690	56856600	16300	7046400	31850	814900
09/09/2014	7500	17088800	3965	4931100	54150	293400	10850	841900	7000	9626300	24000	2527700	1675	24165700	15925	8265300	31300	1110500
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15/09/2014	7300	18770300	4205	2801760	56000	1575400	11250	1757400	7025	4874300	24000	4158300	1670	22823300	16175	7866000	31325	590800
16/09/2014	7250	22269700	4255	1764240	56550	905100	10975	3667800	6975	7087400	23525	2033700	1655	33492700	16175	4613300	31600	1447300
17/09/2014	7275	19083200	4245	9167800	56750	1461100	11200	1934400	7075	10596900	23600	2496200	1670	34367100	16375	5651800	31900	924800
18/09/2014	7375	19295300	4180	6221700	56550	388400	11225	1140000	7100	5473600	23625	2139000	1670	31315600	16425	4675700	31975	561000
19/09/2014	7350	39423200	4275	37492600	55500	1010100	11300	4113800	7100	8997000	23900	3099800	1675	79904400	16325	8720800	31750	1957300
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24/09/2014	7200	23309500	4100	4881100	55800	320000	11000	1709900	7050	6486700	23125	5306900	1675	21489900	15975	12040700	31325	598500
25/09/2014	7175	32472700	4110	2529000	56550	835600	11150	500500	6925	12797900	22850	4932000	1700	66413300	15950	3507600	31300	655100
26/09/2014	7000	51406300	4080	6622200	56950	304300	11300	4757300	6950	10025500	22175	10040700	1695	33519400	15125	18100200	31800	820100
29/09/2014	7050	20336700	4185	4159300	56600	407500	11350	1242500	6975	7348700	21850	2558200	1695	41163900	15250	7576000	32000	1160700
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02/10/2014	6600	77532100	3925	15197500	55900	1290200	10750	2545900	6825	16099200	21025	9312200	1660	68958500	14700	11740200	31650	1088000
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06/10/2014	6725	23274200	3850	6117300	55525	576000	10925	477100	6775	3012000	21800	2339000	1665	27594100	15050	3694200	30750	807000
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09/10/2014	6725	14465900	3815	3093600	55800	714500	11075	1642000	6775	3673800	22150	2142400	1655	27686200	14825	5799000	30700	507600
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14/10/2014	6400	23625500	3780	4996900	56800	340600	11025	2353700	6950	9111500	22150	1653600	1605	42220000	15100	4692100	30925	1399000
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16/10/2014	6350	28626000	3965	11299600	57950	975800	11325	3873900	6825	5066800	22325	2729600	1670	63875800	15500	5355400	30925	928800
17/10/2014	6550	42535400	3980	6479000	60500	1880000	11400	8319700	6975	8270300	22900	7393100	1690	77627800	16000	2474640	31950	2480600
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03/11/2014	6875	17490700	3980	11726600	57950	345400	11000	1785500	6850	15442200	23975	3548900	1685	17504500	15775	7406800	30450	2039000
04/11/2014	6775	30482600	3895	9133400	60700	1461400	10900	2611100	6725	8101000	23575	3178300	1705	53900500	15700	4034300	30375	963000
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07/11/2014	6950	28593900	3730	12311300	61300	955400	11000	1973900	6450	14375700	22875	2683100	1655	60642700	15300	3986600	29800	1639200
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24/11/2014	7100	16110600	4045	6469000	60050	793800	11375	1678000	6800	7063100	24600	7017100	1780	17019900	16300	5988500	31500	1059100
25/11/2014	6900	23114300	4010	9352100	60000	627900	11450	1690700	6775	14457800	24750	4507400	1770	24483800	16075	8386200	31700	2334700

26/11/2014	7025	14680000	3975	3184400	60975	252200	11400	1738200	6675	6720300	24900	3768900	1755	21899700	16000	6456300	31600	1037100
27/11/2014	7100	8172700	4100	13511200	60600	409700	11375	1570800	6725	5274000	24925	1502600	1740	20327600	16050	5363600	32000	1547300
28/11/2014	7125	9034200	4110	3929400	61175	490800	11250	944500	6700	4670000	24675	2089400	1750	22214700	16000	3842200	31800	613500
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02/12/2014	7000	28288100	4115	4245300	61125	443100	11400	2404800	6675	8912300	25675	4472900	1795	37208600	16500	9843700	31275	4990500
03/12/2014	6900	31060700	4115	7849000	60500	298400	11400	738200	6600	7765700	25200	4564300	1830	37468400	16575	7426600	31275	1008400
04/12/2014	6975	23699600	4195	12898600	59950	562900	11600	3464600	6625	8875000	25125	1386700	1800	31958000	16500	4419700	31575	2245500
05/12/2014	7100	16511800	4125	1939800	59575	576700	11750	4431400	6675	3804000	25200	981000	1780	23026000	16550	2693800	31675	533900
08/12/2014	7100	29251800	4080	3847500	59875	391100	11600	3147200	6625	7125000	25100	3163400	1725	46346300	16625	6049700	31150	1240100
09/12/2014	7100	29850800	4035	3309100	59075	662800	11850	2744000	6650	10715700	25000	1964700	1725	37745800	16475	5816200	31025	1608000
10/12/2014	7150	23015200	4000	3285800	59700	298000	11800	1692400	6600	10854400	25200	2584000	1770	42088800	16550	5358900	31100	872800
11/12/2014	7100	21823400	3940	4743000	59600	466600	11500	1231500	6525	9640900	25200	3660000	1770	33807100	16375	5196500	30900	2589800
12/12/2014	7175	27644900	3840	10080600	59700	498600	11700	1180800	6550	8766800	25075	2465100	1775	35168300	16525	4921100	30975	1010400
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16/12/2014	7100	43828900	3780	7835200	58500	820200	11500	4704900	6525	11374500	23275	6159900	1740	72531300	15500	12906400	31200	1830800
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18/12/2014	7200	16623100	3790	12965900	60700	639000	12000	5690200	6450	11514600	23675	2569200	1775	36499000	15800	5840900	31700	1223000
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22/12/2014	7125	21115400	3735	11147200	59475	318400	12275	2198700	6550	6277600	24750	1335400	1825	32419500	16000	4959200	31500	708700
23/12/2014	7275	17248300	3710	10733400	59450	398700	12275	909100	6625	12544100	24750	1034500	1820	19436500	16075	3016900	31500	669900
24/12/2014	7325	20266000	3795	4905600	59600	150700	12400	895200	6600	5119800	24800	783000	1830	13600700	16100	2375000	31525	351600
25/12/2014	7325	0	3795	0	59600	0	12400	0	6600	0	24800	0	1830	0	16100	0	31525	0
26/12/2014	7325	0	3795	0	59600	0	12400	0	6600	0	24800	0	1830	0	16100	0	31525	0

29/12/2014	7350	20762000	3810	5095800	59375	281500	12500	574700	6625	7055900	24700	946700	1830	28946300	16175	3066700	31950	593600
30/12/2014	7425	45532000	3780	10786500	60700	484400	13100	2620200	6750	20693500	25000	1874000	1830	62379000	16200	3095700	32300	1810900
31/12/2014	7425	0	3780	0	60700	0	13100	0	6750	0	25000	0	1830	0	16200	0	32300	0
01/01/2015	7425	0	3780	0	60700	0	13100	0	6750	0	25000	0	1830	0	16200	0	32300	0
02/01/2015	7400	11250600	3800	3402400	61800	730000	13150	2344700	7450	56582900	24800	773700	1810	25306500	16200	3881700	32525	766900
05/01/2015	7225	15960600	3785	6085900	63700	881900	13150	3016200	7475	24205800	24775	2530200	1810	45731500	16225	3005500	32475	1761400
06/01/2015	7050	37116000	3750	6710700	62450	560900	12850	2123200	7375	12161500	24225	1927000	1810	28367600	15925	5405300	32475	1400700
07/01/2015	7150	27627100	3840	8047500	63525	383700	13000	966400	7275	19626100	24625	2026500	1825	17610500	15975	4669700	33125	2901400
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09/01/2015	7025	43416500	3805	8842500	60000	1139400	12950	1494400	7400	23167400	24175	1701500	1790	43357100	15750	8721500	33225	2078000
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13/01/2015	7175	23876900	3895	9722700	60000	480300	12725	1774100	7425	14252500	24650	1489000	1810	39295800	16150	5453800	33000	1194100
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15/01/2015	7275	28609500	3860	3041900	59925	562500	12800	1420800	7450	12615600	24850	4675700	1780	44542400	16200	12175700	32725	326000
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20/01/2015	7450	33204300	3820	4897200	56000	2579000	13400	3458900	7375	7030700	22350	6871600	1800	30592200	14175	25941600	34200	2530300
21/01/2015	7675	58427300	3835	4943900	53025	2866500	14500	6650000	7425	18415600	22125	5539900	1810	44677000	14100	12875600	35950	2889000
22/01/2015	7750	44169700	3925	14444600	56175	3266300	14675	6663700	7625	38720000	22800	3964100	1840	61652300	14400	14727600	35800	1303100
23/01/2015	8075	83763300	4010	19000400	58450	2178400	14800	12563800	7625	15195800	23000	5265700	1880	1,01E+08	14475	10625800	36200	2329700
26/01/2015	8025	46020400	4000	11689700	57100	2507900	14100	5818100	7475	14549600	22950	7107100	1850	37082200	14475	14053800	35500	3573700
27/01/2015	7825	36988800	4025	5754000	58500	791100	14775	2395900	7475	12968600	23000	4688700	1855	24563500	14525	7188400	35525	1178900
28/01/2015	7825	13303500	3985	6282700	57175	643700	14700	2037600	7400	13192200	23000	2398800	1860	22901500	14475	5217600	35500	1039500

29/01/2015	7750	27928900	3950	6833500	56700	837500	14700	1457700	7375	6848100	22875	2929700	1845	26002900	14400	5588700	35375	1043700
30/01/2015	7850	62791800	3955	4609800	57800	683700	14500	3461900	7550	7913500	23000	4225600	1865	51461600	14575	8605800	35825	1966400
02/02/2015	7750	24741000	3780	2298680	56975	875500	14300	1471400	7600	6625600	22900	1575200	1835	18395400	14500	7509100	36175	1498300
03/02/2015	7625	21003300	3780	1668970	55700	609900	14300	1832300	7450	7869600	23150	1761000	1825	31795800	14675	1013730	36375	590500
04/02/2015	7725	28775500	3780	2415570	55450	734900	14100	2308900	7500	8486600	23300	2490000	1835	43307100	14775	1522740	36400	1645900
05/02/2015	7550	38947300	3860	1661410	56500	109470	14075	2108800	7300	1408160	23225	3135800	1825	59419000	14625	8725400	35250	2931600
06/02/2015	7600	43791500	3925	1196380	58500	121980	14400	2103800	7500	1095600	23450	1091800	1835	29840300	14775	4117200	36650	2361200
09/02/2015	7575	18249700	3885	3400800	57025	784900	14525	679000	7475	5324400	23975	3589200	1835	20085500	14900	8165300	36125	722300
10/02/2015	7625	27338800	3855	3667400	55875	815800	14175	2848400	7350	6743900	23900	2408900	1840	32949400	14725	5027400	35500	1790900
11/02/2015	7875	45462300	3785	1752970	55300	861700	14075	2187500	7350	4051200	23800	2665800	1855	31763400	14725	6138400	35675	1270300
12/02/2015	7925	32743400	3850	6548800	54950	845900	14225	814000	7350	1124410	23400	4524300	1850	28352200	14400	1323300	35675	993100
13/02/2015	7950	34871600	3860	4243000	55400	683200	14225	1049700	7400	1289690	23400	1610900	1870	39341100	14450	3569200	36325	1109600
16/02/2015	7800	13527700	3835	2529500	55225	936000	14375	679100	7325	5506000	23425	415800	1800	1,09E+08	14500	8163300	35100	1152800
17/02/2015	7800	10097500	3825	4192000	54950	609100	14200	1370200	7400	4553100	23800	1043600	1810	29457600	14675	3273100	35900	807500
18/02/2015	7950	68697400	3815	6806000	55175	705100	14300	3871300	7425	1495460	23700	1593200	1805	64044200	14775	5334500	35500	1038900
19/02/2015	7950	0	3815	0	55175	0	14300	0	7425	0	23700	0	1805	0	14775	0	35500	0
20/02/2015	7850	75361000	3785	6193800	55000	458400	14200	1559000	7350	4342000	23650	876900	1790	41813900	14750	2718100	35325	1313500
23/02/2015	7900	19879600	3815	5248100	54425	951500	14050	6631300	7350	6440300	23950	1323000	1795	53832800	14800	3703300	36050	1280400
24/02/2015	8000	18250700	3810	9536000	54250	1059900	14025	4177000	7350	1757940	23950	1524000	1815	44819100	14925	8595500	36025	1133800
25/02/2015	8150	39048800	3830	3565600	54200	955000	14050	1519500	7425	3839600	24125	3358800	1820	32699900	15150	6657500	36350	1320000
26/02/2015	8050	25559700	3825	4689200	53800	1273800	14225	2368900	7425	5330700	24050	3219300	1815	25323600	15100	5976200	36500	1747300
27/02/2015	7850	41396200	3785	6045100	53425	838100	14300	3567000	7400	7207300	24050	5231700	1805	58609500	14875	5543600	36000	1994200
02/03/2015	7875	49164200	3830	4288300	55025	1258400	14325	2567800	7425	1043100	24000	3674500	1830	44531200	14900	4715500	36400	1203700

03/03/2015	8000	49550000	3795	7658300	55000	507900	14725	7663700	7425	11373100	24100	3725400	1825	30603300	14825	8928400	36075	1846000
04/03/2015	7875	28378700	3800	3090200	54025	717200	14550	6726800	7450	17126500	24000	1337000	1835	29564300	14875	4795300	36100	626000
05/03/2015	7850	26509100	3795	4488200	54275	553900	14375	1833100	7450	12926100	23900	1492200	1805	27030400	14900	5595200	36250	1142200
06/03/2015	8075	26743100	3820	5559900	54300	803600	14525	1778800	7475	14335400	24300	1485500	1845	29685800	14950	4159100	37800	2487000
09/03/2015	7950	56713500	3775	8495300	53975	1456800	14225	3106000	7375	6210500	24000	1791900	1815	41664000	14750	4540400	37500	2183300
10/03/2015	7975	17798900	3770	8148800	54475	732700	14500	3871200	7475	25388300	23800	2031400	1800	47992200	14700	5142600	37800	2241600
11/03/2015	7850	49276600	3770	15276000	53900	2253700	14300	2901600	7350	12473200	23000	6819700	1785	87221100	14450	7702900	38750	3453400
12/03/2015	7900	35138700	3755	10082900	54075	621800	14600	3840600	7325	9370400	22500	6016100	1790	41393900	14375	5194200	39825	2360800
13/03/2015	7875	27352000	3700	6823300	52800	842300	14625	2081300	7325	13872600	22200	4274700	1800	45502900	14225	5291200	39875	1531300
16/03/2015	7975	24470900	3620	6496800	52200	643300	15000	3384200	7350	8061700	22175	3352700	1790	26961900	14400	3444400	39575	1532000
17/03/2015	8000	26491800	3650	6571700	52150	1056900	14900	2514000	7325	14171700	22475	6392400	1795	63158800	14500	6800900	39000	1361700
18/03/2015	7975	32650000	3620	7000600	51525	711300	14900	3088900	7400	8104700	22275	1951500	1785	46010800	14250	3802500	37500	2161200
19/03/2015	8050	78246500	3685	9989600	52475	476000	14850	1391200	7400	8300400	22325	3614900	1825	49222000	14400	6636500	38300	1517200
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23/03/2015	8175	56395200	3590	5906300	52225	270500	14800	2594000	7400	10381400	21450	2462300	1825	37624200	13525	6352800	38625	932500
24/03/2015	8150	58551400	3625	6914500	50650	1111000	14700	3945800	7475	6730400	21650	2715500	1840	59901200	13425	9697200	38900	2094800
25/03/2015	8200	25176400	3520	6480100	49700	1355200	14350	4485300	7425	8150800	21000	2810900	1805	25398600	12875	10045900	38825	2044500
26/03/2015	8150	33683500	3345	9050200	48100	1274000	14175	5543800	7375	9213200	21025	2939000	1835	59296200	13000	9453100	38500	1476500
27/03/2015	8200	42916500	3410	5561900	49750	1893600	14100	5529800	7425	8827300	21400	3096600	1840	24441700	13450	10043300	39100	1722000
30/03/2015	8375	41823500	3490	6746000	49500	987700	14200	2512400	7475	11483700	21450	2682700	1845	78843800	13550	8594600	39650	1508000
31/03/2015	8575	46884900	3545	10995100	51000	2233000	14675	6016300	7450	11465800	21925	5180100	1865	89461900	13650	8604300	39650	3644100
01/04/2015	8175	50961300	3435	4116200	51000	915500	14400	1149900	7375	9502800	21925	4061800	1865	28883100	13650	4835900	39025	1613900
02/04/2015	8075	23627800	3370	4839700	52000	1433300	14325	3846600	7375	8931200	22150	1539700	1865	30627700	13600	3820800	39050	1478600

03/04/2015	8075	0	3370	0	52000	0	14325	0	7375	0	22150	0	1865	0	13600	0	39050	0
06/04/2015	8200	23208000	3425	5546000	51975	282300	14325	2163900	7375	2779100	22600	1880100	1860	18622500	13625	1487100	39300	375200
07/04/2015	8150	13826400	3615	9157100	52000	712100	14350	2065000	7400	7176700	22950	4268700	1860	19979800	13675	5350800	39800	1432200
08/04/2015	7975	40611500	3630	5349100	53900	223570	14500	3599000	7350	14957400	22950	1966200	1845	31369500	13475	5472700	38700	2800300
09/04/2015	8150	24132500	3670	4266500	54650	968200	14475	2250900	7375	12073800	23100	1643200	1820	42613800	13550	2230400	39350	1584000
10/04/2015	8150	32941300	3695	2288000	53500	606800	14250	3990800	7375	13161700	22850	2166400	1850	51658000	13425	2772800	39400	1134200
13/04/2015	8175	14575600	3535	3594900	52100	576500	14200	6648700	7350	9311800	22800	2156200	1845	28761700	13000	7867100	39775	1309900
14/04/2015	8200	13000600	3540	3662900	50575	101740	14150	6524600	7350	8132000	22650	2632000	1850	26926500	12850	4669600	38750	2352700
15/04/2015	8175	10349900	3570	2157800	49875	103550	14175	1658900	7400	10996800	22900	1949200	1850	33995200	13125	3044800	38625	1601500
16/04/2015	8050	31847400	3680	5256300	49225	140420	14400	1858300	7450	7139900	22900	2311100	1870	52263000	13700	8938900	38100	3174200
17/04/2015	7975	31036600	3595	2925600	50500	156870	14350	1571500	7350	5124200	22900	1754800	1860	27592600	13800	4741700	38125	1193800
20/04/2015	7700	60270400	3530	2397700	52200	109050	14200	1378600	7450	11555300	22675	1413400	1875	23709700	13750	2614900	38400	1225900
21/04/2015	7925	41807400	3570	3610700	53975	144010	14300	1761700	7425	2872100	23425	4018300	1890	36196300	13825	5657600	40000	2415400
22/04/2015	7900	18642400	3475	6705900	53100	136650	14250	2489100	7400	5469200	23425	768100	1900	36713300	13700	6232800	40350	3475600
23/04/2015	7900	31419100	3425	10909300	53100	546800	14100	2300700	7400	5052900	23200	1356800	1890	63413400	13550	8649600	41750	2926800
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27/04/2015	7450	67783000	3230	8655400	52000	155150	13800	3762400	7200	11687900	22700	1692200	1850	40098500	13325	7786600	42075	2170000
28/04/2015	7375	42559700	3130	1144300	53225	101920	13100	14464500	7125	6422400	22500	1704000	1875	37776300	13225	4788200	44500	2020400
29/04/2015	7100	66566500	2950	16592400	52225	185040	12650	12811400	6700	14754200	21700	4210200	1785	91794600	12975	6774500	42250	4907400
30/04/2015	6850	97140700	2835	11209700	50000	400180	13200	6981700	6750	22518100	21000	9186800	1795	59593900	12500	13278500	42600	4228100
01/05/2015	6850	0	2835	0	50000	0	13200	0	6750	0	21000	0	1795	0	12500	0	42600	0
04/05/2015	7100	39236500	2815	5177000	49000	159560	13600	3974700	6875	9072400	22800	2900400	1825	47013600	12725	5988400	43000	1383700
05/05/2015	7275	34491200	2880	7303000	48500	114730	13725	1977300	6875	5069800	22400	4737600	1825	50649800	13000	4212300	44175	2123000

06/05/2015	7350	39825800	2865	10215500	48175	1672800	13675	4047900	6800	8577400	22025	4008300	1820	29416000	13100	7046000	45175	2621600
07/05/2015	7200	28803800	2700	13297000	45975	3010900	13900	2172600	6750	12465400	21350	5125200	1820	43656000	12875	4059700	43400	1769600
08/05/2015	7400	16535600	2790	6193300	46200	2188300	13775	1659600	6650	7563000	22400	6090100	1845	26678400	13325	5310900	44000	1773700
11/05/2015	7325	19273300	2920	10323200	45950	981900	13725	2010800	6650	6809500	22000	647700	1850	18345600	13275	1785600	43650	538600
12/05/2015	7375	23493800	3150	14535000	47150	1659400	13675	5513800	6925	16475600	22425	1325300	1795	54468700	13225	3617200	42500	1740200
13/05/2015	7525	24180400	3215	8358100	47125	1475300	13625	3235400	7200	13933800	23000	3880800	1780	33574400	13025	4120000	42300	1547800
14/05/2015	7525	0	3215	0	47125	0	13625	0	7200	0	23000	0	1780	0	13025	0	42300	0
15/05/2015	7500	38157100	3190	3568100	46500	1615800	13600	3242000	7175	8798100	23050	4146700	1795	35772600	13300	4583300	43500	1540300
18/05/2015	7550	16408200	3110	2646900	45050	2116300	13750	2095100	7050	15544900	22950	1924500	1805	50539700	13375	1188400	43850	782600
19/05/2015	7700	26457600	3135	3747700	45850	1555600	13700	2238200	7050	10893600	23075	3117900	1760	1,18E+08	13325	3345600	43850	1799000
20/05/2015	7850	19458200	3150	2693400	47450	2429000	14000	2765700	6925	22833200	23075	6556900	1800	81791100	13150	8323300	43350	1197100
21/05/2015	7825	15799600	3175	4062200	47250	2077300	13800	3048400	6850	20235300	23250	5009200	1830	62265100	13200	6705700	42850	1290500
22/05/2015	7575	23717200	3205	3011500	47075	1719400	13925	1334100	6875	13887200	22425	4168500	1840	49622700	13125	6959900	43775	1897500
25/05/2015	7575	14850800	3290	4602800	46300	753100	13975	768800	6875	3977700	22500	2389100	1830	11659600	13150	1636400	44400	1389800
26/05/2015	7500	32319900	3365	6849800	46350	1883600	14125	4452100	7025	11860400	22200	3155200	1830	34391800	13250	3898100	45725	2922700
27/05/2015	7425	30032900	3240	6085700	45800	1289500	14200	1914900	7200	14364800	22100	2756800	1740	39187100	13175	5432400	44500	1574700
28/05/2015	7375	16165500	3230	4036700	46200	793400	14150	1837900	7300	13492800	22175	1297800	1755	93121900	13350	4266800	44950	4047400
29/05/2015	7300	42333200	3140	14412100	47100	1915000	14100	5743100	7300	32762800	22400	2519800	1840	1,74E+08	13450	6217600	43300	4156600
01/06/2015	7325	14502900	3190	2739300	47000	752900	14100	1455100	7100	8119300	22050	1335200	1790	33383300	13475	1669900	43200	1022700
02/06/2015	7325	0	3190	0	47000	0	14100	0	7100	0	22050	0	1790	0	13475	0	43200	0
03/06/2015	7050	43574000	3055	7206300	46000	1401900	13750	2678800	6975	11914500	21750	3379600	1760	31767200	13300	4889900	43600	1879500
04/06/2015	7025	26016900	3015	3375600	45000	898300	13675	1470600	6975	3502200	21700	1271800	1765	16269100	13250	3200200	42650	2597500
05/06/2015	7000	36735100	2955	8605800	45200	716500	13450	1388200	7050	6729800	21650	2074400	1740	29460100	13225	1847200	42150	1779400

08/06/2015	6925	18666100	2870	5260300	45200	419500	12975	1180200	6975	3875700	21425	1132500	1700	28845600	12975	2857700	41550	2599800
09/06/2015	6850	47627600	2815	5309000	43025	1560500	12900	3064600	6600	13565800	20750	2299200	1645	53959500	12575	4512800	39700	3370700
10/06/2015	6850	18896100	2900	6574100	43250	1388900	13175	1492800	6775	12058100	20750	1709700	1680	64491800	12825	2826600	41350	2088000
11/06/2015	6950	12238100	2970	6688200	43175	572900	13400	1379600	6650	6569100	20775	1532500	1685	21957800	12650	2219600	40650	2320000
12/06/2015	7075	14582200	2935	2033000	44000	599600	13350	743000	6600	5808900	20900	1267200	1690	17369300	12525	3151400	41225	747200
15/06/2015	6850	12412300	2770	4268300	43500	665000	12700	1202400	6500	6013200	20900	1962200	1600	16792900	12300	2662500	40300	1217300
16/06/2015	6975	14537400	2865	4585500	44275	629400	12700	1078800	6575	6006600	20750	1884100	1620	22319600	12150	4211000	40000	1056200
17/06/2015	7000	26778700	2945	4209900	45625	769100	12900	2626700	6575	6182700	21025	1363700	1670	34708500	12400	3862700	40925	1317700
18/06/2015	7025	13448400	2960	3107200	46000	384800	13150	994500	6850	6529800	21000	2743700	1695	24669700	12300	4698300	41500	1469000
19/06/2015	7050	31525600	3050	6540400	46200	533200	12950	2024700	6950	6318900	21000	5750000	1655	31694000	12425	4614700	41450	1693500
22/06/2015	7000	15859600	2995	3787700	46000	265200	12975	429700	6900	2957300	21025	2440400	1645	19062800	12350	1036100	41550	855800
23/06/2015	6825	17789900	2890	3706200	45950	319200	12900	1266600	6850	4743700	21025	1413300	1640	23296700	12250	2295400	40500	1260800
24/06/2015	6950	17283100	3040	2439400	45300	478000	12850	838900	6900	5828000	21000	2198000	1695	24115500	12300	2468900	41400	1506600
25/06/2015	6850	21746700	2840	8986600	44000	739200	12800	1548300	6750	5467000	21000	1900200	1650	28288800	12100	4894600	40775	1446000
26/06/2015	6825	25079300	2805	4663300	44200	253600	12600	1072800	6625	5490900	20975	2731300	1685	42959000	12075	3002900	40000	3001300
29/06/2015	6875	12960500	2740	4153700	43800	522300	12050	2802800	6475	6773600	20875	2549100	1710	40961000	12000	5350900	39625	1946600
30/06/2015	7075	30190700	2750	6289300	45100	774200	12475	3326900	6575	9149600	20875	2200600	1675	43921100	12000	4734700	39500	2744600
01/07/2015	7025	26153500	2775	3892400	45025	457400	12350	1739500	6500	8956800	20950	1053400	1650	29166600	12000	3078200	40000	1035100
02/07/2015	7075	23515700	2800	7729900	46850	158890 0	12350	2702300	6500	10704800	21800	2672200	1650	22444200	12350	6998000	40325	1437000
03/07/2015	7050	6851900	2885	5364100	47475	1127500	12575	1069600	6725	9987200	21750	2347800	1685	22167400	12250	1803100	41375	813300
06/07/2015	7000	9014900	2855	3431800	47050	321100	12275	920800	6550	4448700	21300	952900	1650	16638800	11900	3837000	40500	666300
07/07/2015	6900	20613600	2840	4053600	46650	595400	12100	2481500	6575	4154200	21175	2131200	1650	17930900	11625	7252600	40250	1715600
08/07/2015	6650	21682400	2720	7946700	45900	660200	12150	1349900	6550	3573800	21175	822500	1655	32909900	11525	6693300	40700	1622500

09/07/2015	6650	17989000	2755	5078200	45625	1036000	11850	2106300	6600	4258200	21000	1686500	1635	19437700	11300	6061700	40100	1965400
10/07/2015	6675	16952200	2675	10335800	46000	367000	12125	1100200	6550	5289400	21050	1948400	1640	28528600	11200	5439500	40200	1225800
13/07/2015	6800	12422900	2700	3378000	47600	608900	12500	2166300	6525	5223400	21025	579800	1665	29767900	11300	3451000	40350	1004000
14/07/2015	6850	13242800	2720	1634400	49000	153950	12500	1765300	6400	10413900	21500	1077800	1695	37448000	11550	7095500	40000	1293100
15/07/2015	6825	12739900	2750	2184500	49550	777500	12550	862800	6225	11225100	21800	1165200	1695	24784400	11575	2597500	40225	1478900
16/07/2015	6825	0	2750	0	49550	0	12550	0	6225	0	21800	0	1695	0	11575	0	40225	0
17/07/2015	6825	0	2750	0	49550	0	12550	0	6225	0	21800	0	1695	0	11575	0	40225	0
20/07/2015	6825	0	2750	0	49550	0	12550	0	6225	0	21800	0	1695	0	11575	0	40225	0
21/07/2015	6825	0	2750	0	49550	0	12550	0	6225	0	21800	0	1695	0	11575	0	40225	0
22/07/2015	6950	37014300	2775	3844100	52000	1314900	13050	1949700	6125	15783000	21800	1641000	1700	35457500	11600	4543400	40025	2140100
23/07/2015	6875	9166500	2730	1433500	53650	1954500	12475	2582300	6200	7452200	22450	953900	1705	23208000	11500	1471500	40150	2680900
24/07/2015	6650	19084500	2680	2530400	51000	1318000	12425	1836600	6150	7186400	22025	562300	1670	22967400	11225	1183000	39975	1467800
27/07/2015	6425	16772300	2600	2790300	50000	732000	12200	1577900	6000	4689900	21225	1318100	1660	23159300	10250	7951800	39750	1733500
28/07/2015	6350	15407000	2480	5386600	47975	1081300	12050	1783300	6025	8691900	20925	1136600	1655	27854700	10100	6662600	40000	1226600
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31/07/2015	6650	24882200	2535	4211800	49500	1198400	12300	5485800	6100	12846100	20025	2679800	1745	40020600	10100	5468400	40000	2083400
03/08/2015	6700	28586900	2585	3250900	49375	761300	12650	3044100	6000	6709000	20050	2958900	1710	34580800	9850	3477300	38875	2204700
04/08/2015	6625	20860700	2550	2849600	48850	309100	12600	1071200	6125	10822700	20000	1236800	1680	39682600	9950	2695900	38600	1532300
05/08/2015	6800	36782900	2540	2064900	48850	566700	12675	863100	6300	10999800	19875	3574900	1675	42792800	10200	5586700	39200	1426100
06/08/2015	6750	29146300	2390	5953300	47375	814000	12725	1139100	6000	9489800	19775	2356600	1660	41829900	9875	7369200	38450	1757600
07/08/2015	6600	22710400	2295	6443400	47100	432700	12725	1665800	5975	8709700	19800	1562500	1660	28850700	9950	2577200	38700	862000
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13/08/2015	6400	18817400	2050	7147300	46500	733300	12250	4292800	6175	7172300	19075	1458800	1545	1,14E+08	8850	7931900	37100	1791600
14/08/2015	6425	21105000	2040	5686500	46500	364100	12500	1341500	5925	7453000	18950	1853600	1560	23461700	8725	5119800	36800	1107300
17/08/2015	6425	0	2040	0	46500	0	12500	0	5925	0	18950	0	1560	0	8725	0	36800	0
18/08/2015	6175	29064600	1970	3814800	46500	677000	12500	1045000	5825	4555300	18100	1781800	1610	34660900	8225	4821500	36625	1946200
19/08/2015	6175	21154600	1915	2606800	46600	566300	12675	911900	5775	2976900	17850	1421800	1580	16564100	8250	4777600	35925	1090400
20/08/2015	6200	18917100	1810	5494100	46750	559600	12475	718100	5700	3960300	17825	997700	1535	20816100	8075	3791200	35775	2168500
21/08/2015	6050	21392600	1680	7398500	45000	479100	12450	1813000	5425	9867300	17650	1247600	1510	35947900	7975	8545400	35600	1680800
24/08/2015	5675	50622200	1420	15984900	41450	1685900	12650	3985700	4955	14286700	16575	2793200	1510	44433200	7200	1311490 0	34000	3731500
25/08/2015	5600	55701400	1430	32262500	41425	689000	12400	4068900	4680	24805600	16800	2413900	1565	45460100	7700	1419260 0	37100	2358500
26/08/2015	5625	47400200	1400	16645800	41950	637800	12375	2116200	4680	25976700	17700	2941100	1540	17943600	8675	1570060 0	36250	2530300
27/08/2015	5825	74809000	1615	27275900	44200	1219500	12675	4242600	5125	19392200	19000	3665500	1655	53787300	8950	1157130 0	38750	2643600
28/08/2015	5775	46871900	1705	21276300	42000	751100	12300	2805700	5225	11251100	19300	1936200	1690	42166100	9350	1486170 0	38000	1442500
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01/09/2015	5700	24640200	1900	18442700	43000	564400	12350	2036100	5200	4807200	18775	2023900	1680	17485900	9025	1023830 0	38925	1246100
02/09/2015	5975	33341500	1885	12153700	42800	930100	12275	1916700	5200	7089400	18425	1242700	1660	16640300	9025	7851800	38500	1878300
03/09/2015	6150	18314300	1950	5468600	43075	629500	12200	901800	5325	8009900	18400	396600	1680	8463900	9225	2310200	38475	959800
04/09/2015	6200	15446400	1970	3451200	42600	353800	12150	701100	5275	5186000	18350	888600	1675	17732800	9050	2843700	38950	1207700
07/09/2015	5850	27141800	1810	4510700	41900	326700	12125	1172600	4940	8186400	18325	1589500	1595	31875300	8375	4804000	38150	981000
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10/09/2015	6050	20709500	1895	5245600	41750	671600	12150	776700	4960	10809200	18625	1817500	1555	44050200	10300	1584770 0	37750	827300

11/09/2015	6125	9601400	1870	3337700	41750	681200	12100	707700	5175	6033400	19525	2162500	1550	22674700	10300	7463400	38750	1341600
14/09/2015	6125	13728900	1910	2374400	42025	265000	12100	1331300	5325	6211100	19975	1003700	1545	21029800	10200	5248100	40250	1394300
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16/09/2015	5900	21072400	2005	6087100	40650	407000	12475	1319500	5250	3758400	18575	777400	1510	27442100	9700	5767600	38425	1494200
17/09/2015	5925	22144100	2010	7694600	41675	625800	13050	2876100	5350	4732900	19000	1082700	1575	36170100	9700	4702600	39100	1384800
18/09/2015	5800	38443500	2045	11341100	42825	849500	12950	2177400	5225	9971100	18800	3515400	1530	51114100	9775	6619600	39100	2175100
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22/09/2015	5800	15504600	2010	3633400	42250	263800	12250	1406300	5300	3339600	17875	1127300	1520	17036500	9475	5836600	38050	1596000
23/09/2015	5500	30132500	1890	4588700	41750	413500	11750	2926400	5175	5605100	17250	1477500	1440	43401500	9475	3495300	36950	1248600
24/09/2015	5500	0	1890	0	41750	0	11750	0	5175	0	17250	0	1440	0	9475	0	36950	0
25/09/2015	5550	31192500	1945	7841200	41775	265000	11625	1804200	5150	4787500	17000	2355100	1370	55481300	9475	7037800	36250	1634700
28/09/2015	5175	28111800	1880	2380200	40500	274500	11250	1258700	5100	5260300	16625	1940600	1315	57815600	9150	4205500	36100	804900
29/09/2015	5300	35135400	1910	6643000	42750	627500	12300	2803700	5400	6548100	16300	3130500	1395	52822500	9100	10837600	38000	2092500
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01/10/2015	5275	20801400	2100	8503100	43300	1032100	12575	857700	5550	4430700	16500	2334500	1380	31381400	9200	3229400	38800	1349400
02/10/2015	5125	25709000	2150	8966600	44450	1451300	12050	1499300	5275	5846200	16325	1971800	1345	39132200	9100	2811700	37800	1223300
05/10/2015	5325	48394200	2350	8976300	46600	1585200	12275	3472100	5525	7035700	17925	4254600	1440	78702000	10050	7815700	39000	1587900
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08/10/2015	6325	46952500	2280	8302600	42925	1771400	12350	1665300	5575	8231600	18950	1240400	1500	36085100	10450	3233400	39500	963000
09/10/2015	6700	65448000	2450	7170700	43425	1523400	13075	5712900	5800	7986300	19275	3596700	1545	65915400	10550	6336500	39050	1585800
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13/10/2015	6125	60567400	2465	9770400	43000	1236600	12750	2239700	5500	5530100	17525	4874600	1460	60700900	10150	7374600	38600	1793300

14/10/2015	6125	0	2465	0	43000	0	12750	0	5500	0	17525	0	1460	0	10150	0	38600	0
16/10/2015	6300	22732100	2500	4807400	42800	708900	13200	1174800	6200	8928800	19550	5613100	1445	62801800	10400	5010000	37575	2440400
19/10/2015	6500	13744000	2545	2185100	43450	1249500	13325	1127200	6400	7036500	18900	2773300	1450	47558300	10625	4145400	38325	1317800
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21/10/2015	6325	20643900	2490	7022500	45475	2622800	13100	764700	6225	8218500	20375	3531000	1435	65568900	11250	7709700	38700	730100
22/10/2015	6200	28382200	2355	5135200	44000	1244600	13300	1382700	6100	13039400	19675	2445500	1415	65397800	10725	6268900	38250	974800
23/10/2015	6300	26247900	2510	7888000	46200	1620600	13575	2732400	6225	11352800	21000	2318400	1460	78478100	10850	6852800	38425	1446100
26/10/2015	6300	25919900	2570	5171300	46350	1735800	13700	1507000	6225	5553700	21025	1388800	1465	42954200	10700	5504500	38650	1369600
27/10/2015	6250	28567200	2600	4174000	45900	1480600	13700	2359100	6200	3770900	20525	2705900	1455	39325500	10325	5562000	38650	1632700
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29/10/2015	5800	38990500	2410	7798700	42900	1990100	13325	2494400	5650	8032200	18350	3992500	1435	53610700	9800	10201000	37200	2306400
30/10/2015	5900	49300200	2500	5607000	42950	3202100	13200	2089400	5525	10035800	18000	3202500	1430	39931400	9800	6445600	37000	2455900
02/11/2015	6250	42795500	2510	3591100	43475	1924800	13125	2756500	5825	5450700	18425	1405700	1390	55582900	9750	4545300	36900	1200400
03/11/2015	6425	40200400	2685	8300800	44850	1902900	13125	2330700	5825	4895400	19200	2381100	1410	53488800	10200	5185100	36800	1168500
04/11/2015	6550	41243100	2700	7158000	48250	3401200	13275	2127500	6100	5902800	20500	2741500	1450	36311700	10600	5781100	37025	1340700
05/11/2015	6500	33984700	2700	3496200	47975	1021900	13075	3347900	6000	5015800	20225	1728900	1425	24239300	10650	5422000	36775	1065400
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09/11/2015	6425	49587900	2630	2209400	47475	1142700	12900	2912900	5550	6986000	18475	2381200	1440	28569700	10250	4248200	36700	879800
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11/11/2015	6775	39828900	2675	8317800	47000	1507500	12525	1957000	5250	7191000	19350	3644300	1340	50511000	10500	11839900	35175	2408000
12/11/2015	6600	27539100	2705	5054700	49000	1511000	12500	2171900	5175	9933300	19300	1317100	1350	49878700	10150	4775400	34600	957700
13/11/2015	6600	19602400	2725	6257400	47500	670200	12400	2577500	5175	5840300	20000	2994400	1355	27529500	10675	13291600	36300	1969300
16/11/2015	6425	22611600	2665	4001500	48750	746300	12350	1051000	5075	5258200	19600	2542900	1350	37937400	10800	9889300	36300	1236500

17/11/2015	6325	32261400	2775	3433600	51175	1742400	12600	2414000	5275	8246000	20575	2503600	1350	31757600	11100	9483600	3637 5	673200
18/11/2015	6350	20938600	2775	2802800	49525	2014400	12750	1872900	5400	7802500	20900	4274700	1350	26431600	11500	1316890 0	3652 5	598800
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24/11/2015	6250	25291800	3125	6884500	49400	414100	12650	1345200	5350	4534700	19500	2348400	1320	33972600	10925	5403100	3692 5	877100
25/11/2015	6175	31342800	3195	7807600	50400	1247300	12600	1000200	5350	4276300	20000	1255400	1350	56076300	11050	2946400	3780 0	1788100
26/11/2015	6225	28844000	3300	11374800	51600	973400	12575	1830000	5475	5025900	21000	2771600	1385	64714600	11175	3267300	3705 0	1270900
27/11/2015	6225	16063200	3220	5515400	50000	610500	12575	966600	5400	4111600	20000	1479900	1360	37626900	11025	2287200	3850 0	900700
30/11/2015	5925	85049600	3165	22684900	48900	2267500	12625	3531900	4875	35363700	18700	8252800	1335	1,74E+08	10625	9809900	3675 0	5142500
01/12/2015	6375	51791000	3390	7695100	51000	1527900	13000	2334800	5225	16797700	20425	3337200	1390	43013000	11025	4018200	3740 0	1883400
02/12/2015	6300	27158400	3300	4154100	50800	1318800	12975	2764200	5175	4011800	19775	2051700	1360	34926000	11175	3964100	3677 5	1506200
03/12/2015	6300	38996200	3280	10253000	51575	1405300	12675	755600	5175	4535100	19925	877300	1350	25835800	11075	1573900	3675 0	878500
04/12/2015	6400	35627100	3030	20228000	51300	930700	12500	984900	5050	10005500	20225	2831700	1310	51070700	10950	4510900	3617 5	1796100
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09/12/2015	6200	0	2850	0	51200	0	12175	0	5075	0	19800	0	1245	0	10975	0	3510 0	0
10/12/2015	6225	44085800	3000	13299400	52000	915200	11950	1170800	5000	10252500	19800	1593500	1185	1,74E+08	11200	4489800	3537 5	1693200
11/12/2015	5900	48862300	2860	7263900	50800	685200	11550	2263800	4960	6187500	19400	927100	1225	1,08E+08	10750	5137800	3467 5	1955700
14/12/2015	6125	34304600	2730	6418100	48500	1311300	11725	1924900	4890	5946300	19400	1013000	1245	53604600	10450	3703500	3515 0	1433800
15/12/2015	6275	39766300	2750	4453100	49250	862400	12150	1835200	4890	4611500	20300	2035200	1235	47692600	10400	5522900	3512 5	1878600
16/12/2015	6275	42585200	2815	7670500	50900	1329300	12500	3472800	4990	9345600	20500	1965000	1240	30078100	10550	6111000	3535 0	1426000
17/12/2015	6400	68657000	2900	9603500	51500	989900	12700	1970400	5125	10652000	21175	1661600	1300	40772600	10800	5316600	3700 0	3293900

18/12/2015	6275	35597900	2700	17880800	51800	804400	12400	1491700	5050	6061800	21000	1757400	1290	50665700	10475	8545500	3587 5	2067200
21/12/2015	6250	34081500	2755	5616400	51800	691700	12775	1254000	4975	5800900	21800	2380100	1275	28575400	10900	6442500	35600	1183400
22/12/2015	6075	48054700	2750	7089100	53725	1108900	12975	2201800	4965	7156600	22175	1600900	1275	50771100	10975	3225700	3697 5	1574400
23/12/2015	6000	45090200	2770	4587600	54150	641800	13050	900800	4955	4252600	22450	1586900	1245	43454100	11200	4807500	36650	1203100
24/12/2015	6000	0	2770	0	54150	0	13050	0	4955	0	22450	0	1245	0	11200	0	36650	0
25/12/2015	6000	0	2770	0	54150	0	13050	0	4955	0	22450	0	1245	0	11200	0	36650	0
28/12/2015	6000	30436700	2745	6571000	53900	544800	13000	1096500	5150	9537300	22450	1474500	1255	45953400	11050	6860200	3702 5	1776100
29/12/2015	6025	23659800	2680	10745200	54575	402200	13150	690100	5125	2961700	22450	404500	1295	29713100	11175	3022300	37250	1084600
30/12/2015	6000	42633200	2600	5920200	55000	828800	13475	2786900	5175	9778200	22325	1784800	1320	45584500	11400	6264000	37000	2431700
31/12/2015	6000	0	2600	0	55000	0	13475	0	5175	0	22325	0	1320	0	11400	0	37000	0
01/01/2016	6000	0	2600	0	55000	0	13475	0	5175	0	22325	0	1320	0	11400	0	37000	0
04/01/2016	5900	28767600	2615	5960700	53725	504400	13200	2579200	5300	26737300	21325	953600	1280	35712200	11125	3162000	36000	1116800
05/01/2016	6125	54224900	2700	6905200	53400	1735200	13000	2550700	5475	18355100	20875	2118000	1275	42205300	11150	5570800	3567 5	3716400
06/01/2016	6075	51121800	2890	19020800	54750	1459800	13875	2749800	5800	22503300	21900	1830100	1375	93458000	11450	5566500	3742 5	2618700
07/01/2016	5975	33606500	2800	7602900	54025	1086300	13875	3915600	5650	12743300	21100	2348700	1325	41350200	11050	3363800	36000	2236400
08/01/2016	6050	44221000	2845	9440900	55100	1565500	14075	2138900	5675	6863900	20600	4390700	1410	75157500	10975	9930500	3617 5	3260600
11/01/2016	5950	22517500	2840	8498700	54500	685700	13950	1117900	5525	8017400	19750	3952300	1385	50965300	10700	8854800	3532 5	1940600
12/01/2016	5925	33527400	2895	8152500	56000	2144800	14050	2412800	5775	18842600	19650	3973300	1430	49912600	10825	8034500	36100	1191600
13/01/2016	5900	55453200	2920	6995500	55900	746300	13975	1776100	5850	7165100	20250	8013200	1480	1,19E+08	10900	5897300	36100	1721600
14/01/2016	5875	1,07E+08	2885	6543500	55800	1188000	13900	2186100	5700	12594900	19775	3674400	1465	79739600	10600	13988700	3572 5	2274000
15/01/2016	6000	45096200	2870	5174200	56300	1237700	14075	2619300	5725	5913700	19625	3503500	1440	23595900	10600	5496900	36000	1175000
18/01/2016	5900	46582000	2815	4748100	55500	840400	14075	3075000	5675	4909800	19350	1746500	1360	68180000	10450	3159700	35650	956600
19/01/2016	5925	29404700	2865	2737900	55000	898400	14300	1988800	5825	6368400	19400	2292700	1365	42986900	10575	4804700	35900	682800

20/01/2016	5775	40416800	2905	13966400	55500	912500	14425	2991400	5750	10637500	18650	5077700	1340	45797800	10200	10191500	3560	2517800
21/01/2016	5850	30584100	3120	18687700	55400	1217500	14575	3094500	5650	8160700	18225	6548400	1330	43323100	10075	6122700	3580	1558700
22/01/2016	5900	30574300	3250	12053800	55250	556600	14650	3119800	5800	7090400	19025	2986300	1355	55192200	10350	4851100	3560	3471400
25/01/2016	6125	48946800	3280	6898500	54975	1063700	14300	2911600	5700	4761100	19550	4059700	1355	40668600	10300	8085600	3562 5	1691300
26/01/2016	6125	34222000	3300	3890900	55875	674800	14700	2739200	5525	11663100	19225	1913200	1370	36409500	10050	7976600	3597 5	1703700
27/01/2016	6150	42405200	3235	11653700	58800	2091200	14900	1903700	5850	8382800	19775	3332000	1370	54637800	10575	8826700	3730 0	2619700
28/01/2016	6250	42142800	3325	8099500	58000	1531400	14850	2404200	5975	14665900	20000	2409300	1360	43635400	10700	8194900	3725 0	1413400
29/01/2016	6450	93248100	3345	15488900	58350	1434100	14450	4521200	6200	17996600	19700	5417300	1335	1,03E+08	11050	16683800	3670 0	4925500

Appendix 3, The calculation of the mean, minimum, maximum return, standard deviation, and skewness 9 types of Stock

Code	Minimum	Maksimum	Average	Standart Deviation	Variance	Skewness	R square	DW	F Statistic	t Statistic/ heteroskedasticity	Z Score	Normality
ASII	-0,08973	0,10697	0.00018	0,02148	0,00000	0,16000	0,01200	1,99100	,002a	-6,80100	2,63800	0,00000
CPIN	-0,16814	0,14698	0.00016	0,03082	0,00100	-0,28400	0,00500	1,87200	,058a	-6,36700	2,41700	0,00000
GGRM	-0,08521	0,07947	0.00014	0,02093	0,00000	-0,05900	0,00700	1,80900	,024a	-3,54300	2,28600	0,00000
ICBP	-0,07333	0,08923	0.00074	0,02037	0,00000	0,24600	0,00400	2,04900	,098a	-0,35500	2,87600	0,00000
INDF	-0,10228	0,11980	0.00005	0,02140	0,00000	0,22600	0,01000	1,91000	,006a	-7,36400	3,54500	0,00000
INTP	-0,10827	0,10935	0.00011	0,02434	0,00100	0,12900	0,01500	1,92500	,001a	-6,30900	2,80000	0,00000
KLBF	-0,09685	0,10368	0.00026	0,02128	0,00000	0,13200	0,00300	2,10500	,123a	-6,77400	2,62100	0,00000
SMGR	-0,12201	0,11922	0.00047	0,02332	0,00100	0,04900	0,00500	1,84500	,052a	-6,56800	2,90500	0,00000
UNVR	-0,07015	0,13217	0.00066	0,02087	0,00000	0,77700	0,00200	2,29900	,239a	1,68400	2,45600	0,00000

Appendix 4, Normality Test Result of 9 Stocks

ASII

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	-1.8480769E-4	6992.3718
	Std. Deviation	.02147507	663.33668
Most Extreme Differences	Absolute	.094	.062
	Positive	.089	.034
	Negative	-.094	-.062
Kolmogorov-Smirnov Z		2.638	1.745
Asymp. Sig. (2-tailed)		.000	.005

CPIN

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	-1.6365385E-4	3672.3846
	Std. Deviation	.03081985	754.41955
Most Extreme Differences	Absolute	.087	.144
	Positive	.080	.062
	Negative	-.087	-.144
Kolmogorov-Smirnov Z		2.417	4.035
Asymp. Sig. (2-tailed)		.000	.000

GGRM

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	.0001414	49318.6538
	Std. Deviation	.02092889	6654.40641
Most Extreme Differences	Absolute	.082	.071
	Positive	.082	.036
	Negative	-.066	-.071
Kolmogorov-Smirnov Z		2.286	1.996
Asymp. Sig. (2-tailed)		.000	.001

ICBP

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	.0007419	11563.2692
	Std. Deviation	.02036586	1590.26853
Most Extreme Differences	Absolute	.103	.101
	Positive	.103	.101
	Negative	-.095	-.073
Kolmogorov-Smirnov Z		2.876	2.825
Asymp. Sig. (2-tailed)		.000	.000

INDF

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	.0000528	6712.7756
	Std. Deviation	.02139578	669.70599
Most Extreme Differences	Absolute	.127	.148
	Positive	.127	.093
	Negative	-.097	-.148
Kolmogorov-Smirnov Z		3.545	4.121
Asymp. Sig. (2-tailed)		.000	.000

INTP

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	-1.1211538E-4	22009.7436
	Std. Deviation	.02433873	2121.47758
Most Extreme Differences	Absolute	.100	.054
	Positive	.100	.054
	Negative	-.088	-.048
Kolmogorov-Smirnov Z		2.800	1.515
Asymp. Sig. (2-tailed)		.000	.020

KLBF

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	.0002600	1521.4808
	Std. Deviation	.02128270	206.38932
Most Extreme Differences	Absolute	.094	.096
	Positive	.086	.083
	Negative	-.094	-.096
Kolmogorov-Smirnov Z		2.621	2.683
Asymp. Sig. (2-tailed)		.000	.000

SMGR

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	-4.7058974E-4	14311.9872
	Std. Deviation	.02331615	2460.60890
Most Extreme Differences	Absolute	.104	.089
	Positive	.104	.059
	Negative	-.091	-.089
Kolmogorov-Smirnov Z		2.905	2.497
Asymp. Sig. (2-tailed)		.000	.000

UNVR

One-Sample Kolmogorov-Smirnov Test

		Return	Share_Price
N		780	780
Normal Parameters[a]	Mean	.0006589	32324.6474
	Std. Deviation	.02086614	5252.12858
Most Extreme Differences	Absolute	.088	.136
	Positive	.088	.136
	Negative	-.074	-.049
Kolmogorov-Smirnov Z		2.456	3.803
Asymp. Sig. (2-tailed)		.000	.000

Appendix 5, Heteroskedastisity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-3.814E-5	.000		-.653	.514	.000	.000					
	Shares_Price	2.328E-9	.000	.011	.891	.373	.000	.000	.011	.011	.011	1.000	1.000

a. Dependent Variable: Return

Appendix 6, Variance Covariance Matrix

Matriks Volatility (V)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR	Portfolio
ASII	0,02148									
CPIN		0,03082								
GGRM			0,02093							
ICBP				0,02037						
INDF					0,02140					
INTP						0,02434				
KLBF							0,02128			
SMGR								0,02332		
UNVR									0,02087	

Matriks correlation (C)

Standart Deviation	
	0,02148
	0,03082
	0,02093
	0,02037
	0,02140
	0,02434
	0,02128
	0,02332
	0,02087
	0,00330

st dev i x st dev j=	Code								
Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0,000461	0,000662	0,000449	0,000437	0,000459	0,000523	0,000457	0,000501	0,000448
CPIN	0,000662	0,00095	0,000645	0,000628	0,000659	0,00075	0,000656	0,000719	0,000643
GGRM	0,000449	0,000645	0,000438	0,000426	0,000448	0,000509	0,000445	0,000488	0,000437
ICBP	0,000437	0,000628	0,000426	0,000415	0,000436	0,000496	0,000433	0,000475	0,000425
INDF	0,000459	0,000659	0,000448	0,000436	0,000458	0,000521	0,000455	0,000499	0,000446
INTP	0,000523	0,00075	0,000509	0,000496	0,000521	0,000592	0,000518	0,000567	0,000508
KLBF	0,000457	0,000656	0,000445	0,000433	0,000455	0,000518	0,000453	0,000496	0,000444
SMGR	0,000501	0,000719	0,000488	0,000475	0,000499	0,000567	0,000496	0,000544	0,000487
UNVR	0,000448	0,000643	0,000437	0,000425	0,000446	0,000508	0,000444	0,000487	0,000435
Correlation Martix									
Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	1	0,47436	0,32224	0,37442	0,45320	0,49842	0,42130	0,51168	0,42408
CPIN	0,47436	1	0,42188	0,36999	0,39591	0,44034	0,40725	0,47591	0,40942
GGRM	0,32224	0,42188	1	0,31617	0,33692	0,35293	0,33643	0,36954	0,34128
ICBP	0,37442	0,36999	0,31617	1	0,36814	0,33278	0,43199	0,30018	0,34605
INDF	0,45320	0,39591	0,33692	0,36814	1	0,48233	0,40005	0,40269	0,41037
INTP	0,49842	0,44034	0,35293	0,33278	0,48233	1	0,43545	0,68637	0,37137
KLBF	0,42130	0,40725	0,33643	0,43199	0,40005	0,43545	1	0,41835	0,46918
SMGR	0,51168	0,47591	0,36954	0,30018	0,40269	0,68637	0,41835	1	0,38095
UNVR	0,42408	0,40942	0,34128	0,34605	0,41037	0,37137	0,46918	0,38095	1

Matriks Volatility x Correlation (VC)

x^Tx=									
Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0,35926	0,244888	0,112969	0,127729	0,162424	0,203201	0,150194	0,199842	0,148223
CPIN	0,244888	0,73994	0,212257	0,181143	0,203634	0,25764	0,208361	0,266753	0,205371
GGRM	0,112969	0,212257	0,34122	0,105115	0,117679	0,140226	0,116885	0,140657	0,116252
ICBP	0,127729	0,181143	0,105115	0,32310	0,125124	0,128662	0,146048	0,111181	0,114703
INDF	0,162424	0,203634	0,117679	0,125124	0,35661	0,195913	0,142092	0,156694	0,142904
INTP	0,203201	0,25764	0,140226	0,128662	0,195913	0,46146	0,175938	0,303815	0,147111
KLBF	0,150194	0,208361	0,116885	0,146048	0,142092	0,175938	0,35285	0,161928	0,16252
SMGR	0,199842	0,266753	0,140657	0,111181	0,156694	0,303815	0,161928	0,42350	0,144564
UNVR	0,148223	0,205371	0,116252	0,114703	0,142904	0,147111	0,16252	0,144564	0,33917
Variance-Covariance Matrix = $(1/n)x^Tx$				n=	780				
Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0,000461	0,000314	0,000145	0,000164	0,000208	0,000261	0,000193	0,000256	0,000190
CPIN	0,000314	0,000949	0,000272	0,000232	0,000261	0,000330	0,000267	0,000342	0,000263
GGRM	0,000145	0,000272	0,000437	0,000135	0,000151	0,000180	0,000150	0,000180	0,000149
ICBP	0,000164	0,000232	0,000135	0,000414	0,000160	0,000165	0,000187	0,000143	0,000147
INDF	0,000208	0,000261	0,000151	0,000160	0,000457	0,000251	0,000182	0,000201	0,000183
INTP	0,000261	0,000330	0,000180	0,000165	0,000251	0,000592	0,000226	0,000390	0,000189
KLBF	0,000193	0,000267	0,000150	0,000187	0,000182	0,000226	0,000452	0,000208	0,000208
SMGR	0,000256	0,000342	0,000180	0,000143	0,000201	0,000390	0,000208	0,000543	0,000185

UNVR	0,000190	0,000263	0,000149	0,000147	0,000183	0,000189	0,000208	0,000185	0,000435

Matriks Volatility x Correlation x Volatility (VCV)

Code	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
ASII	0,000461	0,474359	0,322242	0,374418	0,453203	0,498423	0,421304	0,511683	0,424078
CPIN	0,474359	0,000949	0,421882	0,369994	0,395911	0,440341	0,407253	0,475913	0,409423
GGRM	0,322242	0,421882	0,000437	0,316169	0,336921	0,35293	0,336426	0,369543	0,341284
ICBP	0,374418	0,369994	0,316169	0,000414	0,368141	0,332778	0,431989	0,300177	0,346048
INDF	0,453203	0,395911	0,336921	0,368141	0,000457	0,482328	0,400054	0,402692	0,410373
INTP	0,498423	0,440341	0,35293	0,332778	0,482328	0,000592	0,435452	0,686373	0,371374
KLBF	0,421304	0,407253	0,336426	0,431989	0,400054	0,435452	0,000452	0,418354	0,469185
SMGR	0,511683	0,475913	0,369543	0,300177	0,402692	0,686373	0,418354	0,000543	0,380949
UNVR	0,424078	0,409423	0,341284	0,346048	0,410373	0,371374	0,469185	0,380949	0,000435

Appendix 7, Calculation of VaR with a Time Horizon 1 days, 5 days, 10 days, and 20 days ahead

]							
Code	Z Score	Skewness	Z correction				
ASII	2,63800	0,16000	2,47909216				
CPIN	2,41700	-0,28400	2,646182746				
GGRM	2,28600	-0,05900	2,327553661				
ICBP	2,87600	0,24600	2,577873584				
INDF	3,54500	0,22600	3,109308725				
INTP	2,80000	0,12900	2,65294				
KLBF	2,62100	0,13200	2,491867898				
SMGR	2,90500	0,04900	2,844247963				
UNVR	2,45600	0,77700	1,804364288				
t 5 days=	2,236067977						
t 10 days=	3,16227766						
t 20 days=	4,472135955						
Variance-Covariance VAR Calculation							
Code	Price Exposure	St. Deviation	Z correction	VAR 1 day	VAR 5 Days	VAR 10 Days	Var 20 Days
ASII	6.450,00	0,02148	2,47909216	343,38947	767,84220	1085,892853	1535,6844
CPIN	3.345,00	0,03082	2,646182746	272,80133	610,002308	862,6735373	1220,00462
GGRM	58.350,00	0,02093	2,327553661	2.842,41023	6355,8225	8988,490381	12711,645
ICBP	14.450,00	0,02037	2,577873584	758,63385	1696,35686	2399,010879	3392,71372
INDF	6.200,00	0,02140	3,109308725	412,46173	922,292466	1304,318513	1844,58493
INTP	19.700,00	0,02434	2,65294	1.272,01305	2844,30765	4022,458452	5688,6153
KLBF	1.335,00	0,02128	2,491867898	70,79996	158,31352	223,8891277	316,627041
SMGR	11.050,00	0,02332	2,844247963	732,80188	1638,59482	2317,323011	3277,18963

UNVR	36.700,00	0,02087	1,804364288	1.381,75932	3089,70778	4369,506645	6179,41556
Total Exposure	157.580,00						

Appendix 8, VaR Historical Simulation Calculation

Stock Return from highest lost until highest profit)								
ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
-0.08973	-0.16814	-0.08521	-0.07333	-0.10228	-0.10827	-0.09685	-0.12201	-0.07015
-0.06996	-0.16814	-0.08217	-0.07323	-0.09685	-0.10164	-0.07946	-0.10223	-0.06737
-0.06795	-0.13840	-0.07859	-0.07163	-0.09062	-0.09341	-0.07062	-0.09087	-0.06694
-0.06433	-0.12430	-0.07278	-0.06514	-0.07253	-0.09109	-0.06454	-0.08338	-0.05889
-0.06399	-0.10147	-0.06858	-0.06506	-0.07045	-0.07984	-0.06454	-0.08052	-0.05766
-0.06395	-0.09471	-0.05499	-0.06188	-0.06596	-0.07920	-0.06351	-0.07751	-0.05667
-0.05942	-0.09309	-0.05459	-0.05792	-0.06561	-0.07480	-0.06325	-0.07696	-0.05188
-0.05884	-0.08580	-0.05456	-0.05689	-0.06169	-0.06992	-0.06252	-0.06936	-0.05129
-0.05811	-0.08471	-0.05382	-0.05358	-0.06150	-0.06883	-0.05716	-0.06931	-0.05009
-0.05716	-0.08328	-0.05339	-0.05219	-0.05799	-0.06721	-0.05472	-0.06356	-0.04871
-0.05548	-0.07928	-0.05106	-0.05206	-0.05763	-0.06674	-0.05407	-0.06331	-0.04735
-0.05362	-0.07453	-0.05066	-0.04991	-0.05710	-0.06284	-0.05324	-0.06188	-0.04720
-0.05311	-0.07146	-0.04932	-0.04901	-0.05526	-0.06252	-0.05043	-0.05972	-0.04652
-0.05274	-0.07126	-0.04825	-0.04845	-0.05365	-0.05407	-0.04983	-0.05901	-0.04599
-0.05165	-0.07090	-0.04779	-0.04506	-0.05365	-0.05179	-0.04983	-0.05738	-0.04555
-0.05129	-0.07020	-0.04696	-0.04463	-0.05264	-0.04879	-0.04939	-0.05311	-0.04538
-0.05109	-0.06805	-0.04674	-0.04293	-0.05245	-0.04773	-0.04919	-0.05311	-0.04241
-0.04939	-0.06596	-0.04633	-0.04265	-0.05092	-0.04720	-0.04894	-0.05254	-0.04110
-0.04777	-0.06454	-0.04354	-0.04256	-0.05082	-0.04639	-0.04755	-0.05219	-0.04089
-0.04632	-0.06188	-0.04317	-0.04233	-0.04945	-0.04604	-0.04652	-0.05089	-0.04082

-0.04317	-0.06160	-0.04299	-0.04167	-0.04913	-0.04589	-0.04616	-0.04779	-0.04008
-0.04308	-0.06156	-0.04188	-0.04101	-0.04879	-0.04583	-0.04432	-0.04546	-0.03981
-0.04256	-0.06124	-0.04179	-0.04041	-0.04621	-0.04454	-0.04139	-0.04521	-0.03922
-0.04215	-0.06124	-0.04162	-0.03892	-0.04570	-0.04428	-0.04116	-0.04474	-0.03882
-0.04128	-0.06087	-0.04158	-0.03828	-0.04412	-0.04402	-0.04097	-0.04341	-0.03796
-0.03969	-0.05942	-0.04134	-0.03792	-0.04238	-0.04349	-0.04082	-0.04338	-0.03740
-0.03922	-0.05932	-0.04037	-0.03637	-0.04133	-0.04334	-0.04055	-0.04324	-0.03625
-0.03892	-0.05923	-0.03828	-0.03620	-0.03922	-0.04334	-0.04027	-0.04312	-0.03606
-0.03871	-0.05862	-0.03815	-0.03595	-0.03827	-0.04302	-0.03979	-0.04256	-0.03572
-0.03861	-0.05815	-0.03648	-0.03572	-0.03663	-0.04215	-0.03953	-0.04256	-0.03552
-0.03861	-0.05786	-0.03647	-0.03572	-0.03624	-0.04214	-0.03815	-0.04183	-0.03445
-0.03827	-0.05664	-0.03585	-0.03537	-0.03604	-0.04021	-0.03774	-0.04175	-0.03442
-0.03803	-0.05639	-0.03572	-0.03496	-0.03402	-0.03943	-0.03774	-0.04150	-0.03441
-0.03800	-0.05609	-0.03565	-0.03406	-0.03204	-0.03884	-0.03704	-0.04108	-0.03431
-0.03774	-0.05574	-0.03474	-0.03405	-0.03200	-0.03829	-0.03637	-0.04101	-0.03406
-0.03774	-0.05481	-0.03451	-0.03371	-0.03118	-0.03814	-0.03534	-0.04063	-0.03344
-0.03718	-0.05380	-0.03440	-0.03348	-0.03031	-0.03792	-0.03534	-0.04032	-0.03237
-0.03690	-0.05194	-0.03432	-0.03342	-0.03031	-0.03782	-0.03509	-0.03922	-0.03210
-0.03690	-0.05183	-0.03429	-0.03337	-0.02963	-0.03766	-0.03390	-0.03867	-0.03171
-0.03690	-0.05129	-0.03297	-0.03297	-0.02941	-0.03721	-0.03390	-0.03785	-0.03169
-0.03585	-0.05099	-0.03277	-0.03297	-0.02935	-0.03700	-0.03334	-0.03784	-0.03155
-0.03578	-0.04859	-0.03272	-0.03279	-0.02797	-0.03620	-0.03306	-0.03730	-0.03118
-0.03559	-0.04832	-0.03255	-0.03188	-0.02778	-0.03613	-0.03289	-0.03696	-0.03088
-0.03554	-0.04827	-0.03226	-0.03175	-0.02778	-0.03572	-0.03200	-0.03611	-0.03069
-0.03534	-0.04779	-0.03220	-0.03161	-0.02772	-0.03559	-0.03200	-0.03568	-0.03062

-0.03509	-0.04747	-0.03210	-0.03131	-0.02703	-0.03538	-0.03150	-0.03556	-0.03056
-0.03479	-0.04725	-0.03168	-0.03003	-0.02703	-0.03525	-0.03139	-0.03520	-0.03002
-0.03449	-0.04652	-0.03150	-0.02985	-0.02679	-0.03496	-0.03121	-0.03490	-0.02995
-0.03442	-0.04572	-0.03144	-0.02971	-0.02667	-0.03440	-0.03077	-0.03466	-0.02934
-0.03413	-0.04526	-0.03109	-0.02956	-0.02637	-0.03438	-0.03054	-0.03390	-0.02931
-0.03403	-0.04445	-0.03102	-0.02950	-0.02620	-0.03419	-0.03031	-0.03339	-0.02892
-0.03327	-0.04427	-0.03100	-0.02899	-0.02598	-0.03405	-0.03031	-0.03323	-0.02853
-0.03291	-0.04366	-0.03084	-0.02740	-0.02598	-0.03390	-0.03031	-0.03238	-0.02804
-0.03247	-0.04324	-0.03066	-0.02731	-0.02532	-0.03381	-0.03031	-0.03217	-0.02803
-0.03232	-0.04317	-0.03062	-0.02727	-0.02532	-0.03367	-0.03018	-0.03186	-0.02796
-0.03226	-0.04130	-0.03047	-0.02693	-0.02469	-0.03300	-0.03008	-0.03155	-0.02740
-0.03195	-0.04082	-0.03035	-0.02667	-0.02445	-0.03296	-0.02985	-0.03131	-0.02718
-0.03125	-0.04056	-0.03011	-0.02667	-0.02401	-0.03279	-0.02985	-0.03077	-0.02716
-0.03058	-0.04055	-0.03007	-0.02620	-0.02387	-0.03275	-0.02930	-0.03055	-0.02691
-0.03008	-0.03976	-0.03006	-0.02588	-0.02364	-0.03234	-0.02899	-0.03046	-0.02670
-0.02963	-0.03961	-0.02971	-0.02575	-0.02353	-0.03201	-0.02899	-0.03015	-0.02653
-0.02920	-0.03832	-0.02965	-0.02575	-0.02353	-0.03175	-0.02889	-0.02976	-0.02619
-0.02909	-0.03785	-0.02943	-0.02532	-0.02307	-0.03146	-0.02878	-0.02971	-0.02611
-0.02885	-0.03734	-0.02912	-0.02514	-0.02290	-0.03113	-0.02837	-0.02961	-0.02611
-0.02880	-0.03714	-0.02909	-0.02500	-0.02281	-0.03070	-0.02778	-0.02899	-0.02610
-0.02857	-0.03704	-0.02844	-0.02475	-0.02264	-0.03052	-0.02772	-0.02861	-0.02560
-0.02857	-0.03692	-0.02672	-0.02475	-0.02237	-0.03048	-0.02755	-0.02837	-0.02556
-0.02840	-0.03690	-0.02652	-0.02469	-0.02214	-0.03045	-0.02715	-0.02830	-0.02553
-0.02840	-0.03651	-0.02580	-0.02439	-0.02214	-0.03031	-0.02691	-0.02830	-0.02508
-0.02817	-0.03611	-0.02554	-0.02421	-0.02206	-0.03027	-0.02632	-0.02822	-0.02466

-0.02687	-0.03611	-0.02518	-0.02418	-0.02198	-0.02999	-0.02569	-0.02791	-0.02456
-0.02687	-0.03569	-0.02494	-0.02415	-0.02182	-0.02998	-0.02525	-0.02677	-0.02443
-0.02685	-0.03551	-0.02469	-0.02410	-0.02174	-0.02963	-0.02477	-0.02610	-0.02436
-0.02667	-0.03492	-0.02437	-0.02391	-0.02151	-0.02957	-0.02469	-0.02578	-0.02410
-0.02632	-0.03449	-0.02391	-0.02353	-0.02120	-0.02953	-0.02454	-0.02545	-0.02378
-0.02617	-0.03399	-0.02386	-0.02339	-0.02113	-0.02908	-0.02424	-0.02538	-0.02318
-0.02564	-0.03368	-0.02386	-0.02331	-0.02105	-0.02883	-0.02410	-0.02506	-0.02281
-0.02548	-0.03352	-0.02370	-0.02320	-0.02105	-0.02837	-0.02388	-0.02463	-0.02278
-0.02532	-0.03352	-0.02345	-0.02310	-0.02076	-0.02836	-0.02381	-0.02457	-0.02269
-0.02524	-0.03350	-0.02337	-0.02308	-0.02062	-0.02829	-0.02381	-0.02442	-0.02247
-0.02516	-0.03275	-0.02335	-0.02299	-0.02062	-0.02817	-0.02372	-0.02420	-0.02247
-0.02511	-0.03226	-0.02309	-0.02247	-0.02048	-0.02791	-0.02353	-0.02418	-0.02203
-0.02469	-0.03195	-0.02305	-0.02234	-0.02037	-0.02754	-0.02335	-0.02410	-0.02175
-0.02452	-0.03194	-0.02291	-0.02225	-0.02034	-0.02729	-0.02326	-0.02377	-0.02137
-0.02449	-0.03164	-0.02290	-0.02220	-0.02034	-0.02720	-0.02317	-0.02338	-0.02136
-0.02410	-0.03152	-0.02280	-0.02211	-0.02034	-0.02716	-0.02281	-0.02327	-0.02117
-0.02393	-0.03145	-0.02263	-0.02186	-0.02028	-0.02611	-0.02281	-0.02307	-0.02112
-0.02391	-0.03142	-0.02256	-0.02177	-0.01993	-0.02598	-0.02231	-0.02295	-0.02097
-0.02361	-0.03125	-0.02252	-0.02169	-0.01987	-0.02572	-0.02231	-0.02258	-0.02078
-0.02353	-0.03046	-0.02241	-0.02151	-0.01951	-0.02449	-0.02214	-0.02232	-0.02075
-0.02353	-0.03031	-0.02231	-0.02151	-0.01934	-0.02434	-0.02214	-0.02231	-0.02075
-0.02353	-0.03031	-0.02225	-0.02114	-0.01934	-0.02418	-0.02214	-0.02212	-0.02051
-0.02335	-0.02985	-0.02198	-0.02087	-0.01929	-0.02407	-0.02182	-0.02144	-0.02042
-0.02335	-0.02955	-0.02192	-0.02062	-0.01905	-0.02403	-0.02182	-0.02144	-0.02034
-0.02299	-0.02950	-0.02184	-0.02041	-0.01905	-0.02398	-0.02164	-0.02128	-0.02020

-0.02291	-0.02947	-0.02151	-0.02020	-0.01883	-0.02377	-0.02120	-0.02128	-0.02004
-0.02281	-0.02939	-0.02148	-0.02007	-0.01869	-0.02374	-0.02105	-0.02126	-0.01999
-0.02269	-0.02932	-0.02145	-0.01996	-0.01862	-0.02347	-0.02099	-0.02105	-0.01967
-0.02264	-0.02919	-0.02144	-0.01980	-0.01852	-0.02332	-0.02074	-0.02083	-0.01956
-0.02264	-0.02832	-0.02127	-0.01980	-0.01842	-0.02305	-0.02069	-0.02049	-0.01954
-0.02247	-0.02826	-0.02101	-0.01971	-0.01789	-0.02304	-0.02068	-0.02024	-0.01953
-0.02247	-0.02786	-0.02081	-0.01951	-0.01789	-0.02278	-0.02062	-0.02020	-0.01942
-0.02214	-0.02776	-0.02080	-0.01942	-0.01776	-0.02245	-0.02048	-0.02013	-0.01942
-0.02198	-0.02740	-0.02072	-0.01914	-0.01770	-0.02231	-0.02038	-0.02013	-0.01932
-0.02182	-0.02733	-0.02071	-0.01892	-0.01758	-0.02227	-0.02034	-0.01980	-0.01930
-0.02182	-0.02729	-0.02053	-0.01865	-0.01754	-0.02198	-0.02026	-0.01972	-0.01920
-0.02171	-0.02721	-0.02051	-0.01852	-0.01739	-0.02176	-0.02020	-0.01965	-0.01919
-0.02166	-0.02721	-0.02046	-0.01827	-0.01709	-0.02164	-0.01980	-0.01956	-0.01913
-0.02166	-0.02697	-0.02037	-0.01818	-0.01702	-0.02153	-0.01961	-0.01947	-0.01892
-0.02166	-0.02691	-0.02020	-0.01818	-0.01686	-0.02133	-0.01927	-0.01934	-0.01844
-0.02132	-0.02572	-0.01982	-0.01814	-0.01686	-0.02103	-0.01920	-0.01915	-0.01835
-0.02113	-0.02571	-0.01980	-0.01805	-0.01653	-0.02092	-0.01881	-0.01908	-0.01814
-0.02105	-0.02564	-0.01980	-0.01802	-0.01653	-0.02091	-0.01855	-0.01908	-0.01795
-0.02097	-0.02545	-0.01943	-0.01770	-0.01639	-0.02062	-0.01855	-0.01895	-0.01776
-0.02062	-0.02540	-0.01912	-0.01770	-0.01619	-0.02051	-0.01848	-0.01893	-0.01766
-0.02062	-0.02532	-0.01907	-0.01703	-0.01594	-0.02041	-0.01822	-0.01866	-0.01765
-0.02062	-0.02517	-0.01897	-0.01660	-0.01538	-0.02031	-0.01796	-0.01864	-0.01746
-0.02048	-0.02492	-0.01893	-0.01659	-0.01538	-0.02030	-0.01789	-0.01822	-0.01745
-0.01996	-0.02475	-0.01883	-0.01626	-0.01527	-0.02025	-0.01770	-0.01813	-0.01745
-0.01972	-0.02469	-0.01874	-0.01590	-0.01527	-0.02020	-0.01739	-0.01799	-0.01742

-0.01967	-0.02454	-0.01869	-0.01575	-0.01527	-0.01999	-0.01727	-0.01767	-0.01729
-0.01954	-0.02439	-0.01859	-0.01567	-0.01527	-0.01997	-0.01721	-0.01739	-0.01727
-0.01934	-0.02396	-0.01853	-0.01563	-0.01515	-0.01974	-0.01690	-0.01736	-0.01709
-0.01905	-0.02395	-0.01845	-0.01533	-0.01515	-0.01938	-0.01653	-0.01732	-0.01707
-0.01828	-0.02383	-0.01818	-0.01527	-0.01504	-0.01926	-0.01653	-0.01715	-0.01685
-0.01770	-0.02372	-0.01792	-0.01518	-0.01498	-0.01925	-0.01653	-0.01700	-0.01678
-0.01758	-0.02368	-0.01789	-0.01482	-0.01496	-0.01911	-0.01648	-0.01698	-0.01671
-0.01681	-0.02353	-0.01787	-0.01482	-0.01493	-0.01900	-0.01642	-0.01692	-0.01654
-0.01681	-0.02350	-0.01770	-0.01482	-0.01493	-0.01882	-0.01642	-0.01681	-0.01648
-0.01667	-0.02345	-0.01767	-0.01474	-0.01493	-0.01867	-0.01639	-0.01669	-0.01616
-0.01660	-0.02337	-0.01766	-0.01453	-0.01489	-0.01825	-0.01631	-0.01658	-0.01603
-0.01658	-0.02273	-0.01765	-0.01439	-0.01487	-0.01821	-0.01626	-0.01657	-0.01595
-0.01646	-0.02259	-0.01763	-0.01436	-0.01482	-0.01812	-0.01622	-0.01653	-0.01589
-0.01642	-0.02238	-0.01741	-0.01408	-0.01482	-0.01802	-0.01610	-0.01642	-0.01577
-0.01642	-0.02231	-0.01721	-0.01390	-0.01474	-0.01802	-0.01609	-0.01639	-0.01577
-0.01633	-0.02226	-0.01683	-0.01389	-0.01460	-0.01786	-0.01600	-0.01635	-0.01575
-0.01626	-0.02186	-0.01682	-0.01389	-0.01460	-0.01770	-0.01575	-0.01609	-0.01571
-0.01613	-0.02182	-0.01662	-0.01382	-0.01455	-0.01770	-0.01550	-0.01524	-0.01563
-0.01587	-0.02167	-0.01660	-0.01370	-0.01449	-0.01760	-0.01550	-0.01521	-0.01527
-0.01587	-0.02159	-0.01657	-0.01354	-0.01439	-0.01752	-0.01538	-0.01504	-0.01521
-0.01587	-0.02151	-0.01638	-0.01354	-0.01424	-0.01743	-0.01536	-0.01501	-0.01497
-0.01580	-0.02135	-0.01634	-0.01354	-0.01421	-0.01739	-0.01527	-0.01493	-0.01488
-0.01575	-0.02120	-0.01621	-0.01348	-0.01413	-0.01735	-0.01504	-0.01490	-0.01485
-0.01575	-0.02083	-0.01607	-0.01345	-0.01408	-0.01702	-0.01504	-0.01489	-0.01485
-0.01569	-0.02073	-0.01595	-0.01336	-0.01404	-0.01695	-0.01493	-0.01474	-0.01464

-0.01563	-0.02041	-0.01591	-0.01333	-0.01389	-0.01688	-0.01482	-0.01473	-0.01443
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-0.00349	-0.00396	-0.00380	-0.00248	-0.00349	-0.00416	-0.00298	-0.00384	-0.00323
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-0.00345	-0.00393	-0.00376	-0.00245	-0.00348	-0.00412	-0.00297	-0.00377	-0.00319
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0.00000	0.00383	0.00048	0.00000	0.00000	0.00000	0.00271	0.00154	0.00127
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0.00000	0.00392	0.00093	0.00000	0.00000	0.00000	0.00272	0.00154	0.00164
0.00000	0.00394	0.00094	0.00171	0.00000	0.00100	0.00272	0.00155	0.00165
0.00000	0.00395	0.00095	0.00174	0.00000	0.00102	0.00275	0.00156	0.00168
0.00000	0.00399	0.00100	0.00175	0.00000	0.00103	0.00279	0.00157	0.00173
0.00305	0.00402	0.00101	0.00177	0.00000	0.00103	0.00279	0.00162	0.00175
0.00306	0.00414	0.00102	0.00178	0.00000	0.00103	0.00280	0.00166	0.00178
0.00312	0.00476	0.00108	0.00193	0.00000	0.00106	0.00280	0.00168	0.00185
0.00313	0.00477	0.00116	0.00196	0.00000	0.00107	0.00281	0.00168	0.00206
0.00314	0.00495	0.00125	0.00206	0.00000	0.00107	0.00282	0.00168	0.00220
0.00315	0.00503	0.00126	0.00220	0.00000	0.00107	0.00284	0.00179	0.00220
0.00318	0.00503	0.00131	0.00223	0.00000	0.00108	0.00293	0.00184	0.00229
0.00323	0.00506	0.00132	0.00225	0.00000	0.00111	0.00294	0.00186	0.00235

0.00324	0.00508	0.00136	0.00227	0.00000	0.00111	0.00295	0.00190	0.00241
0.00325	0.00508	0.00137	0.00229	0.00000	0.00117	0.00295	0.00216	0.00241
0.00325	0.00522	0.00143	0.00238	0.00000	0.00119	0.00296	0.00216	0.00242
0.00326	0.00522	0.00167	0.00239	0.00000	0.00119	0.00296	0.00224	0.00249
0.00334	0.00524	0.00168	0.00241	0.00000	0.00119	0.00297	0.00234	0.00249
0.00336	0.00524	0.00179	0.00242	0.00000	0.00120	0.00297	0.00248	0.00250
0.00341	0.00525	0.00184	0.00245	0.00000	0.00124	0.00297	0.00272	0.00263
0.00342	0.00525	0.00190	0.00250	0.00000	0.00125	0.00298	0.00273	0.00266
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0.00347	0.00528	0.00219	0.00250	0.00335	0.00198	0.00301	0.00303	0.00313
0.00347	0.00531	0.00234	0.00250	0.00336	0.00202	0.00303	0.00303	0.00316
0.00351	0.00533	0.00235	0.00250	0.00336	0.00203	0.00305	0.00303	0.00319
0.00355	0.00557	0.00240	0.00358	0.00337	0.00206	0.00310	0.00305	0.00321
0.00357	0.00575	0.00251	0.00381	0.00337	0.00207	0.00311	0.00312	0.00325
0.00358	0.00600	0.00252	0.00382	0.00337	0.00208	0.00316	0.00313	0.00327
0.00363	0.00608	0.00260	0.00393	0.00337	0.00208	0.00323	0.00325	0.00331
0.00367	0.00623	0.00267	0.00394	0.00337	0.00213	0.00324	0.00325	0.00333
0.00372	0.00635	0.00290	0.00397	0.00338	0.00217	0.00342	0.00326	0.00336
0.00375	0.00635	0.00291	0.00399	0.00340	0.00218	0.00344	0.00332	0.00353
0.00390	0.00639	0.00316	0.00399	0.00341	0.00222	0.00345	0.00333	0.00356
0.00391	0.00639	0.00317	0.00412	0.00342	0.00224	0.00351	0.00335	0.00356
0.00394	0.00645	0.00321	0.00426	0.00347	0.00225	0.00353	0.00337	0.00372
0.00402	0.00647	0.00324	0.00434	0.00350	0.00227	0.00354	0.00338	0.00385
0.00404	0.00647	0.00324	0.00438	0.00351	0.00232	0.00355	0.00345	0.00400

0.00407	0.00657	0.00325	0.00442	0.00351	0.00233	0.00359	0.00345	0.00406
0.00416	0.00660	0.00346	0.00445	0.00351	0.00233	0.00363	0.00347	0.00408
0.00423	0.00660	0.00353	0.00445	0.00353	0.00233	0.00367	0.00349	0.00412
0.00423	0.00664	0.00353	0.00447	0.00353	0.00238	0.00370	0.00357	0.00412
0.00426	0.00669	0.00367	0.00449	0.00353	0.00238	0.00404	0.00358	0.00415
0.00445	0.00669	0.00368	0.00449	0.00354	0.00253	0.00528	0.00359	0.00419
0.00612	0.00679	0.00396	0.00454	0.00354	0.00258	0.00545	0.00359	0.00436
0.00612	0.00702	0.00400	0.00454	0.00354	0.00264	0.00546	0.00366	0.00441
0.00619	0.00718	0.00400	0.00456	0.00355	0.00298	0.00546	0.00380	0.00443
0.00631	0.00725	0.00401	0.00457	0.00355	0.00303	0.00546	0.00387	0.00445
0.00631	0.00730	0.00406	0.00458	0.00355	0.00306	0.00548	0.00391	0.00449
0.00633	0.00737	0.00409	0.00460	0.00355	0.00307	0.00554	0.00406	0.00456
0.00635	0.00738	0.00425	0.00462	0.00357	0.00318	0.00554	0.00407	0.00468
0.00635	0.00743	0.00434	0.00462	0.00357	0.00325	0.00556	0.00416	0.00471
0.00635	0.00749	0.00443	0.00465	0.00358	0.00326	0.00557	0.00449	0.00472
0.00643	0.00750	0.00445	0.00475	0.00358	0.00334	0.00557	0.00451	0.00478
0.00645	0.00754	0.00454	0.00480	0.00358	0.00339	0.00559	0.00452	0.00485
0.00647	0.00757	0.00462	0.00487	0.00359	0.00342	0.00573	0.00454	0.00486
0.00647	0.00757	0.00466	0.00488	0.00360	0.00350	0.00590	0.00454	0.00492
0.00649	0.00772	0.00478	0.00491	0.00364	0.00359	0.00592	0.00456	0.00494
0.00649	0.00778	0.00488	0.00491	0.00366	0.00416	0.00592	0.00465	0.00496
0.00649	0.00782	0.00497	0.00494	0.00367	0.00416	0.00592	0.00468	0.00509
0.00651	0.00784	0.00502	0.00494	0.00367	0.00419	0.00593	0.00471	0.00537
0.00651	0.00788	0.00507	0.00499	0.00368	0.00439	0.00595	0.00473	0.00544
0.00654	0.00788	0.00522	0.00499	0.00370	0.00455	0.00601	0.00477	0.00551

0.00656	0.00789	0.00523	0.00499	0.00370	0.00456	0.00601	0.00500	0.00554
0.00658	0.00791	0.00528	0.00501	0.00377	0.00500	0.00612	0.00501	0.00559
0.00658	0.00795	0.00544	0.00513	0.00378	0.00504	0.00612	0.00507	0.00560
0.00660	0.00801	0.00559	0.00517	0.00378	0.00505	0.00639	0.00512	0.00561
0.00664	0.00810	0.00567	0.00526	0.00380	0.00524	0.00643	0.00519	0.00564
0.00680	0.00825	0.00574	0.00530	0.00381	0.00525	0.00647	0.00520	0.00564
0.00685	0.00830	0.00581	0.00557	0.00381	0.00525	0.00649	0.00531	0.00576
0.00687	0.00844	0.00591	0.00576	0.00381	0.00531	0.00660	0.00536	0.00577
0.00690	0.00857	0.00601	0.00587	0.00382	0.00537	0.00664	0.00542	0.00584
0.00690	0.00860	0.00602	0.00593	0.00382	0.00543	0.00667	0.00544	0.00587
0.00697	0.00882	0.00640	0.00627	0.00416	0.00545	0.00678	0.00555	0.00606
0.00702	0.00887	0.00657	0.00657	0.00438	0.00550	0.00680	0.00562	0.00610
0.00707	0.00895	0.00665	0.00660	0.00442	0.00578	0.00683	0.00602	0.00610
0.00709	0.00897	0.00675	0.00666	0.00647	0.00596	0.00685	0.00604	0.00620
0.00712	0.00905	0.00685	0.00669	0.00647	0.00598	0.00697	0.00623	0.00620
0.00712	0.00905	0.00698	0.00670	0.00656	0.00600	0.00704	0.00629	0.00627
0.00717	0.00919	0.00705	0.00678	0.00660	0.00604	0.00707	0.00635	0.00627
0.00727	0.00930	0.00705	0.00686	0.00664	0.00608	0.00712	0.00651	0.00633
0.00730	0.00940	0.00744	0.00689	0.00669	0.00612	0.00714	0.00654	0.00638
0.00733	0.00941	0.00775	0.00702	0.00669	0.00617	0.00722	0.00654	0.00639
0.00733	0.00945	0.00776	0.00702	0.00671	0.00622	0.00738	0.00656	0.00648
0.00738	0.00946	0.00784	0.00707	0.00673	0.00642	0.00743	0.00660	0.00651
0.00743	0.00970	0.00786	0.00714	0.00673	0.00646	0.00743	0.00660	0.00654
0.00749	0.00985	0.00788	0.00715	0.00673	0.00646	0.00743	0.00663	0.00656
0.00749	0.00985	0.00791	0.00747	0.00673	0.00650	0.00749	0.00664	0.00657

0.00749	0.00988	0.00811	0.00747	0.00673	0.00651	0.00755	0.00664	0.00660
0.00755	0.00995	0.00816	0.00749	0.00676	0.00657	0.00755	0.00666	0.00694
0.00760	0.01005	0.00819	0.00753	0.00676	0.00680	0.00755	0.00678	0.00699
0.00766	0.01009	0.00819	0.00784	0.00678	0.00686	0.00766	0.00679	0.00706
0.00766	0.01020	0.00835	0.00787	0.00678	0.00697	0.00791	0.00679	0.00709
0.00772	0.01022	0.00860	0.00803	0.00678	0.00697	0.00791	0.00686	0.00719
0.00778	0.01026	0.00861	0.00810	0.00680	0.00719	0.00797	0.00690	0.00734
0.00781	0.01031	0.00869	0.00837	0.00683	0.00728	0.00797	0.00692	0.00746
0.00784	0.01042	0.00870	0.00848	0.00683	0.00737	0.00800	0.00697	0.00748
0.00797	0.01064	0.00871	0.00851	0.00687	0.00740	0.00803	0.00709	0.00752
0.00803	0.01070	0.00878	0.00864	0.00694	0.00749	0.00803	0.00727	0.00767
0.00806	0.01081	0.00880	0.00870	0.00697	0.00753	0.00803	0.00735	0.00780
0.00810	0.01082	0.00892	0.00897	0.00704	0.00756	0.00812	0.00736	0.00793
0.00810	0.01096	0.00896	0.00897	0.00707	0.00756	0.00819	0.00741	0.00797
0.00851	0.01096	0.00905	0.00902	0.00709	0.00772	0.00825	0.00743	0.00801
0.00905	0.01097	0.00912	0.00905	0.00709	0.00789	0.00825	0.00746	0.00802
0.00922	0.01115	0.00913	0.00909	0.00712	0.00797	0.00830	0.00757	0.00804
0.00936	0.01127	0.00920	0.00913	0.00712	0.00805	0.00837	0.00758	0.00809
0.00952	0.01130	0.00922	0.00915	0.00712	0.00816	0.00837	0.00758	0.00825
0.00954	0.01140	0.00923	0.00917	0.00717	0.00840	0.00839	0.00758	0.00844
0.00963	0.01156	0.00930	0.00926	0.00719	0.00873	0.00853	0.00766	0.00845
0.00966	0.01161	0.00936	0.00930	0.00722	0.00874	0.00858	0.00766	0.00858
0.00972	0.01163	0.00944	0.00930	0.00727	0.00878	0.00866	0.00770	0.00864
0.00976	0.01182	0.00958	0.00943	0.00727	0.00883	0.00878	0.00781	0.00871
0.00976	0.01182	0.00962	0.00943	0.00727	0.00887	0.00886	0.00795	0.00874

0.00982	0.01250	0.00977	0.00978	0.00730	0.00916	0.00886	0.00799	0.00875
0.01015	0.01266	0.00981	0.00980	0.00730	0.00917	0.00892	0.00805	0.00879
0.01026	0.01274	0.00995	0.00990	0.00733	0.00928	0.00897	0.00805	0.00885
0.01026	0.01274	0.01033	0.00990	0.00733	0.00945	0.00897	0.00810	0.00892
0.01033	0.01279	0.01052	0.00990	0.00735	0.00962	0.00902	0.00819	0.00893
0.01043	0.01290	0.01060	0.00995	0.00738	0.00964	0.00908	0.00823	0.00898
0.01047	0.01290	0.01068	0.01005	0.00738	0.00970	0.00913	0.00833	0.00906
0.01051	0.01306	0.01072	0.01005	0.00738	0.00978	0.00925	0.00834	0.00922
0.01051	0.01307	0.01075	0.01005	0.00741	0.00980	0.00925	0.00837	0.00935
0.01062	0.01319	0.01075	0.01013	0.00743	0.00995	0.00966	0.00838	0.00939
0.01062	0.01351	0.01080	0.01026	0.00743	0.01008	0.00966	0.00841	0.00942
0.01081	0.01364	0.01085	0.01026	0.00743	0.01010	0.01012	0.00842	0.00945
0.01081	0.01367	0.01090	0.01028	0.00743	0.01021	0.01062	0.00845	0.00947
0.01085	0.01379	0.01105	0.01034	0.00743	0.01028	0.01073	0.00863	0.00955
0.01109	0.01387	0.01116	0.01038	0.00746	0.01041	0.01075	0.00884	0.00955
0.01134	0.01402	0.01117	0.01040	0.00746	0.01047	0.01075	0.00889	0.00960
0.01134	0.01410	0.01123	0.01047	0.00746	0.01073	0.01078	0.00897	0.00966
0.01147	0.01418	0.01129	0.01049	0.00749	0.01075	0.01078	0.00901	0.00972
0.01161	0.01422	0.01147	0.01060	0.00749	0.01081	0.01101	0.00902	0.00978
0.01174	0.01439	0.01158	0.01068	0.00752	0.01086	0.01108	0.00902	0.00983
0.01212	0.01454	0.01172	0.01081	0.00752	0.01086	0.01109	0.00912	0.01003
0.01227	0.01462	0.01188	0.01097	0.00755	0.01098	0.01143	0.00913	0.01006
0.01232	0.01496	0.01191	0.01099	0.00760	0.01098	0.01161	0.00913	0.01008
0.01247	0.01508	0.01198	0.01125	0.00760	0.01112	0.01173	0.00917	0.01018
0.01258	0.01511	0.01205	0.01133	0.00760	0.01129	0.01180	0.00919	0.01038

0.01262	0.01519	0.01205	0.01133	0.00760	0.01131	0.01190	0.00919	0.01046
0.01266	0.01527	0.01207	0.01136	0.00766	0.01143	0.01198	0.00952	0.01090
0.01274	0.01535	0.01215	0.01136	0.00772	0.01157	0.01198	0.00962	0.01093
0.01282	0.01564	0.01217	0.01143	0.00778	0.01159	0.01198	0.00966	0.01093
0.01282	0.01567	0.01218	0.01147	0.00791	0.01207	0.01220	0.00972	0.01093
0.01290	0.01580	0.01219	0.01153	0.00803	0.01220	0.01235	0.00976	0.01094
0.01290	0.01583	0.01220	0.01161	0.00837	0.01224	0.01242	0.01005	0.01103
0.01299	0.01583	0.01237	0.01183	0.00844	0.01232	0.01242	0.01010	0.01105
0.01299	0.01592	0.01245	0.01188	0.00858	0.01233	0.01254	0.01011	0.01105
0.01299	0.01594	0.01259	0.01198	0.00901	0.01242	0.01303	0.01020	0.01111
0.01303	0.01596	0.01264	0.01198	0.00905	0.01261	0.01311	0.01047	0.01112
0.01303	0.01618	0.01285	0.01200	0.00971	0.01264	0.01342	0.01054	0.01133
0.01307	0.01619	0.01325	0.01200	0.01008	0.01287	0.01364	0.01057	0.01145
0.01311	0.01620	0.01326	0.01215	0.01015	0.01292	0.01370	0.01096	0.01147
0.01316	0.01635	0.01328	0.01233	0.01019	0.01299	0.01370	0.01102	0.01151
0.01316	0.01636	0.01335	0.01238	0.01019	0.01317	0.01370	0.01108	0.01203
0.01316	0.01653	0.01336	0.01242	0.01043	0.01325	0.01370	0.01108	0.01227
0.01325	0.01670	0.01346	0.01242	0.01066	0.01328	0.01375	0.01121	0.01236
0.01325	0.01679	0.01357	0.01251	0.01070	0.01338	0.01376	0.01122	0.01242
0.01342	0.01681	0.01370	0.01269	0.01073	0.01344	0.01379	0.01125	0.01250
0.01351	0.01703	0.01374	0.01285	0.01085	0.01348	0.01389	0.01125	0.01257
0.01365	0.01719	0.01382	0.01319	0.01101	0.01355	0.01389	0.01137	0.01258
0.01399	0.01726	0.01386	0.01325	0.01105	0.01377	0.01389	0.01138	0.01258
0.01408	0.01739	0.01390	0.01336	0.01113	0.01382	0.01391	0.01141	0.01258
0.01408	0.01760	0.01406	0.01348	0.01117	0.01386	0.01399	0.01156	0.01264

0.01429	0.01761	0.01408	0.01348	0.01126	0.01416	0.01399	0.01159	0.01264
0.01439	0.01780	0.01412	0.01351	0.01139	0.01471	0.01399	0.01161	0.01267
0.01439	0.01784	0.01420	0.01354	0.01147	0.01485	0.01429	0.01164	0.01274
0.01449	0.01791	0.01422	0.01354	0.01217	0.01494	0.01443	0.01175	0.01327
0.01460	0.01791	0.01424	0.01354	0.01247	0.01511	0.01460	0.01183	0.01339
0.01460	0.01814	0.01431	0.01354	0.01290	0.01537	0.01471	0.01189	0.01342
0.01465	0.01858	0.01482	0.01361	0.01290	0.01537	0.01471	0.01200	0.01345
0.01471	0.01905	0.01486	0.01367	0.01318	0.01550	0.01473	0.01200	0.01354
0.01493	0.01918	0.01498	0.01373	0.01342	0.01564	0.01477	0.01208	0.01361
0.01527	0.01922	0.01507	0.01379	0.01347	0.01567	0.01482	0.01212	0.01373
0.01527	0.01925	0.01507	0.01390	0.01351	0.01567	0.01486	0.01223	0.01384
0.01536	0.01925	0.01514	0.01392	0.01361	0.01568	0.01493	0.01229	0.01395
0.01538	0.01953	0.01535	0.01401	0.01375	0.01575	0.01493	0.01235	0.01397
0.01550	0.01954	0.01550	0.01425	0.01379	0.01588	0.01495	0.01235	0.01405
0.01563	0.01967	0.01578	0.01425	0.01379	0.01607	0.01504	0.01246	0.01410
0.01563	0.01980	0.01592	0.01431	0.01384	0.01612	0.01513	0.01262	0.01418
0.01575	0.02017	0.01612	0.01478	0.01394	0.01638	0.01527	0.01316	0.01421
0.01575	0.02020	0.01624	0.01478	0.01404	0.01660	0.01527	0.01320	0.01433
0.01575	0.02020	0.01634	0.01482	0.01408	0.01661	0.01527	0.01338	0.01436
0.01590	0.02042	0.01707	0.01489	0.01424	0.01670	0.01531	0.01344	0.01439
0.01600	0.02053	0.01721	0.01504	0.01424	0.01700	0.01550	0.01351	0.01462
0.01613	0.02062	0.01741	0.01515	0.01424	0.01706	0.01550	0.01403	0.01474
0.01626	0.02062	0.01745	0.01553	0.01425	0.01707	0.01563	0.01410	0.01476
0.01675	0.02094	0.01745	0.01563	0.01425	0.01713	0.01575	0.01424	0.01482
0.01698	0.02094	0.01749	0.01575	0.01429	0.01716	0.01575	0.01432	0.01488

0.01709	0.02105	0.01760	0.01578	0.01439	0.01718	0.01587	0.01489	0.01533
0.01709	0.02111	0.01766	0.01586	0.01449	0.01725	0.01600	0.01493	0.01542
0.01715	0.02116	0.01770	0.01587	0.01449	0.01735	0.01619	0.01493	0.01544
0.01776	0.02135	0.01786	0.01594	0.01460	0.01748	0.01621	0.01496	0.01546
0.01783	0.02139	0.01788	0.01600	0.01460	0.01763	0.01626	0.01501	0.01557
0.01795	0.02142	0.01796	0.01604	0.01465	0.01768	0.01626	0.01522	0.01582
0.01808	0.02166	0.01802	0.01607	0.01471	0.01770	0.01635	0.01533	0.01585
0.01815	0.02206	0.01802	0.01632	0.01474	0.01785	0.01637	0.01536	0.01610
0.01815	0.02210	0.01805	0.01635	0.01482	0.01791	0.01639	0.01585	0.01647
0.01848	0.02215	0.01810	0.01662	0.01493	0.01802	0.01639	0.01606	0.01666
0.01855	0.02247	0.01827	0.01669	0.01493	0.01840	0.01644	0.01633	0.01667
0.01858	0.02247	0.01835	0.01693	0.01504	0.01842	0.01648	0.01638	0.01678
0.01869	0.02254	0.01858	0.01724	0.01504	0.01893	0.01653	0.01639	0.01709
0.01876	0.02265	0.01862	0.01731	0.01504	0.01913	0.01653	0.01642	0.01741
0.01898	0.02270	0.01876	0.01739	0.01504	0.01919	0.01653	0.01644	0.01753
0.01905	0.02283	0.01880	0.01770	0.01509	0.01930	0.01657	0.01647	0.01756
0.01927	0.02319	0.01893	0.01770	0.01509	0.01933	0.01685	0.01653	0.01782
0.01929	0.02320	0.01917	0.01770	0.01515	0.01942	0.01700	0.01653	0.01806
0.01934	0.02326	0.01921	0.01774	0.01527	0.01953	0.01734	0.01653	0.01827
0.01934	0.02336	0.01929	0.01784	0.01527	0.01976	0.01734	0.01669	0.01853
0.01954	0.02353	0.01942	0.01805	0.01533	0.01980	0.01739	0.01712	0.01880
0.01967	0.02353	0.01956	0.01818	0.01538	0.02011	0.01754	0.01712	0.01898
0.01972	0.02362	0.01970	0.01818	0.01538	0.02020	0.01770	0.01718	0.01898
0.01974	0.02372	0.01980	0.01835	0.01544	0.02031	0.01776	0.01748	0.01914
0.01980	0.02385	0.02002	0.01839	0.01667	0.02031	0.01786	0.01784	0.01944

0.01980	0.02429	0.02004	0.01843	0.01698	0.02034	0.01789	0.01813	0.01951
0.01980	0.02541	0.02015	0.01850	0.01835	0.02062	0.01862	0.01822	0.01959
0.01993	0.02548	0.02022	0.01869	0.01835	0.02062	0.01912	0.01919	0.01961
0.02000	0.02584	0.02028	0.01893	0.01869	0.02089	0.01931	0.01969	0.01967
0.02013	0.02598	0.02051	0.01915	0.01887	0.02112	0.02020	0.01969	0.01970
0.02020	0.02618	0.02083	0.01919	0.01932	0.02135	0.02048	0.01980	0.01976
0.02083	0.02640	0.02086	0.01932	0.01967	0.02137	0.02048	0.01993	0.01982
0.02098	0.02684	0.02129	0.01961	0.02024	0.02138	0.02055	0.02029	0.01985
0.02105	0.02684	0.02155	0.01971	0.02028	0.02141	0.02062	0.02029	0.02032
0.02105	0.02721	0.02207	0.01980	0.02034	0.02190	0.02093	0.02037	0.02044
0.02105	0.02721	0.02281	0.02004	0.02048	0.02214	0.02098	0.02089	0.02052
0.02112	0.02744	0.02283	0.02010	0.02048	0.02234	0.02099	0.02105	0.02055
0.02135	0.02754	0.02328	0.02020	0.02048	0.02262	0.02099	0.02117	0.02055
0.02151	0.02759	0.02353	0.02020	0.02062	0.02279	0.02105	0.02128	0.02074
0.02171	0.02765	0.02366	0.02024	0.02062	0.02334	0.02120	0.02128	0.02083
0.02182	0.02778	0.02422	0.02029	0.02091	0.02341	0.02120	0.02138	0.02098
0.02182	0.02833	0.02454	0.02041	0.02091	0.02377	0.02151	0.02140	0.02111
0.02206	0.02865	0.02469	0.02047	0.02105	0.02441	0.02171	0.02151	0.02123
0.02240	0.02869	0.02489	0.02076	0.02113	0.02469	0.02192	0.02188	0.02130
0.02247	0.02871	0.02490	0.02088	0.02114	0.02487	0.02198	0.02192	0.02136
0.02247	0.02920	0.02497	0.02109	0.02135	0.02532	0.02216	0.02198	0.02170
0.02262	0.02975	0.02544	0.02132	0.02141	0.02532	0.02247	0.02219	0.02191
0.02264	0.02975	0.02557	0.02155	0.02151	0.02543	0.02247	0.02229	0.02198
0.02264	0.02985	0.02578	0.02166	0.02158	0.02564	0.02247	0.02247	0.02217
0.02264	0.02991	0.02598	0.02166	0.02158	0.02710	0.02264	0.02281	0.02232

0.02264	0.02995	0.02602	0.02231	0.02158	0.02722	0.02264	0.02286	0.02238
0.02264	0.03002	0.02621	0.02247	0.02166	0.02723	0.02273	0.02299	0.02247
0.02299	0.03003	0.02624	0.02283	0.02166	0.02727	0.02281	0.02342	0.02254
0.02299	0.03035	0.02649	0.02294	0.02174	0.02817	0.02299	0.02353	0.02284
0.02308	0.03077	0.02678	0.02353	0.02182	0.02821	0.02317	0.02375	0.02286
0.02335	0.03096	0.02710	0.02353	0.02198	0.02830	0.02335	0.02381	0.02299
0.02353	0.03125	0.02715	0.02363	0.02214	0.02845	0.02353	0.02433	0.02330
0.02360	0.03199	0.02722	0.02387	0.02214	0.02937	0.02353	0.02443	0.02341
0.02372	0.03217	0.02734	0.02391	0.02281	0.02938	0.02395	0.02482	0.02342
0.02387	0.03226	0.02751	0.02395	0.02299	0.02971	0.02410	0.02492	0.02375
0.02393	0.03228	0.02817	0.02421	0.02310	0.02989	0.02410	0.02494	0.02391
0.02410	0.03232	0.02826	0.02433	0.02342	0.02994	0.02461	0.02504	0.02402
0.02419	0.03232	0.02844	0.02439	0.02345	0.03005	0.02560	0.02516	0.02429
0.02435	0.03234	0.02899	0.02441	0.02375	0.03008	0.02575	0.02627	0.02482
0.02461	0.03279	0.02906	0.02455	0.02387	0.03125	0.02643	0.02655	0.02532
0.02469	0.03301	0.02907	0.02469	0.02393	0.03136	0.02683	0.02693	0.02542
0.02532	0.03372	0.02925	0.02469	0.02443	0.03157	0.02691	0.02698	0.02571
0.02548	0.03390	0.02951	0.02532	0.02449	0.03161	0.02694	0.02698	0.02615
0.02550	0.03409	0.02985	0.02625	0.02461	0.03163	0.02703	0.02698	0.02657
0.02564	0.03530	0.02985	0.02643	0.02461	0.03175	0.02715	0.02712	0.02696
0.02598	0.03563	0.02991	0.02643	0.02505	0.03221	0.02774	0.02740	0.02727
0.02607	0.03581	0.03004	0.02667	0.02609	0.03240	0.02797	0.02778	0.02736
0.02615	0.03618	0.03028	0.02672	0.02617	0.03254	0.02837	0.02817	0.02765
0.02667	0.03656	0.03044	0.02673	0.02620	0.03259	0.02857	0.02847	0.02797
0.02740	0.03666	0.03048	0.02708	0.02658	0.03283	0.02920	0.02848	0.02847

0.02740	0.03774	0.03066	0.02713	0.02669	0.03293	0.02956	0.02865	0.02853
0.02762	0.03806	0.03114	0.02715	0.02685	0.03334	0.02963	0.02875	0.02862
0.02817	0.03822	0.03124	0.02740	0.02685	0.03360	0.02963	0.02889	0.02880
0.02826	0.04027	0.03198	0.02754	0.02698	0.03364	0.02963	0.02918	0.02899
0.02868	0.04045	0.03261	0.02759	0.02703	0.03382	0.03008	0.02920	0.02899
0.02880	0.04055	0.03290	0.02806	0.02778	0.03462	0.03031	0.02934	0.02899
0.02887	0.04061	0.03295	0.02840	0.02797	0.03469	0.03031	0.03077	0.02941
0.02888	0.04082	0.03307	0.02885	0.02817	0.03500	0.03040	0.03109	0.02950
0.02963	0.04279	0.03311	0.02912	0.02817	0.03539	0.03054	0.03121	0.02985
0.02975	0.04308	0.03344	0.02927	0.02857	0.03563	0.03077	0.03175	0.02994
0.02985	0.04317	0.03359	0.02956	0.02857	0.03572	0.03101	0.03189	0.03031
0.03008	0.04349	0.03373	0.02979	0.03031	0.03606	0.03125	0.03219	0.03077
0.03031	0.04445	0.03413	0.02985	0.03101	0.03739	0.03131	0.03365	0.03094
0.03058	0.04445	0.03415	0.03046	0.03150	0.03757	0.03138	0.03403	0.03125
0.03101	0.04554	0.03419	0.03077	0.03175	0.03774	0.03155	0.03418	0.03133
0.03125	0.04558	0.03421	0.03132	0.03249	0.03871	0.03197	0.03435	0.03157
0.03142	0.04604	0.03430	0.03279	0.03334	0.03977	0.03200	0.03540	0.03205
0.03150	0.04618	0.03451	0.03290	0.03352	0.04120	0.03200	0.03572	0.03246
0.03213	0.04688	0.03479	0.03294	0.03390	0.04189	0.03252	0.03647	0.03261
0.03220	0.04699	0.03589	0.03297	0.03390	0.04196	0.03299	0.03696	0.03411
0.03226	0.04820	0.03629	0.03345	0.03403	0.04296	0.03320	0.03736	0.03558
0.03320	0.04879	0.03637	0.03409	0.03437	0.04363	0.03323	0.03785	0.03617
0.03327	0.04976	0.03649	0.03434	0.03611	0.04389	0.03437	0.03840	0.03633
0.03362	0.05058	0.03801	0.03466	0.03697	0.04445	0.03487	0.03847	0.03707
0.03494	0.05060	0.03828	0.03469	0.03774	0.04456	0.03509	0.03887	0.03707

0.03585	0.05129	0.03830	0.03494	0.03774	0.04485	0.03509	0.03977	0.03790
0.03637	0.05335	0.03922	0.03561	0.03860	0.04535	0.03534	0.04055	0.03798
0.03663	0.05399	0.03970	0.03593	0.03865	0.04629	0.03578	0.04109	0.03822
0.03663	0.05423	0.03973	0.03739	0.03894	0.04719	0.03624	0.04118	0.03827
0.03743	0.05488	0.03981	0.03754	0.03957	0.04750	0.03637	0.04132	0.03839
0.03743	0.05597	0.04063	0.03907	0.04052	0.04788	0.03699	0.04288	0.03895
0.03743	0.05651	0.04065	0.03922	0.04097	0.04793	0.03861	0.04335	0.04019
0.03746	0.05716	0.04151	0.03941	0.04167	0.04801	0.03970	0.04372	0.04072
0.03758	0.06137	0.04167	0.04001	0.04243	0.04854	0.03970	0.04463	0.04082
0.03774	0.06205	0.04205	0.04158	0.04380	0.04855	0.04037	0.04508	0.04159
0.03828	0.06374	0.04256	0.04256	0.04412	0.04879	0.04116	0.04512	0.04187
0.03853	0.06509	0.04306	0.04317	0.04426	0.04931	0.04150	0.04577	0.04252
0.03892	0.06575	0.04306	0.04384	0.04478	0.04944	0.04215	0.04696	0.04385
0.03922	0.06596	0.04317	0.04406	0.04526	0.04971	0.04256	0.04950	0.04402
0.03987	0.06740	0.04553	0.04506	0.04591	0.05021	0.04256	0.04987	0.04439
0.04108	0.06800	0.04636	0.04676	0.04613	0.05135	0.04286	0.05043	0.04490
0.04144	0.06868	0.04652	0.04688	0.04616	0.05141	0.04445	0.05092	0.04562
0.04196	0.06937	0.04724	0.04735	0.04630	0.05219	0.04652	0.05154	0.04615
0.04368	0.07110	0.04729	0.04801	0.04725	0.05579	0.04688	0.05249	0.04789
0.04380	0.07140	0.04750	0.05129	0.04840	0.05662	0.04725	0.05264	0.04796
0.04712	0.07191	0.04826	0.05546	0.05288	0.05685	0.04730	0.05380	0.04803
0.05055	0.07461	0.04855	0.05703	0.05716	0.06114	0.05086	0.05519	0.04879
0.05212	0.07582	0.04879	0.05705	0.05716	0.06517	0.05129	0.05789	0.04990
0.05407	0.07599	0.05052	0.05743	0.05736	0.06551	0.05449	0.06188	0.05129
0.05506	0.07654	0.05102	0.05951	0.05767	0.06678	0.05906	0.06485	0.05416

0.05535	0.08277	0.05183	0.06091	0.06265	0.06721	0.06002	0.06714	0.05604
0.05760	0.08338	0.05185	0.06454	0.06506	0.07087	0.06218	0.07146	0.06669
0.05763	0.08499	0.05225	0.06514	0.06581	0.07733	0.06645	0.07146	0.07374
0.06230	0.08701	0.05347	0.06973	0.06933	0.07796	0.06825	0.07297	0.07411
0.06968	0.08786	0.05407	0.07222	0.07535	0.08224	0.07202	0.07512	0.07460
0.07250	0.08895	0.05771	0.07411	0.08307	0.08471	0.07350	0.07853	0.08726
0.07320	0.09237	0.05782	0.07453	0.08307	0.08824	0.07551	0.08097	0.09057
0.08201	0.11170	0.06044	0.07889	0.09083	0.09278	0.08771	0.09930	0.09579
0.10677	0.14286	0.07307	0.08252	0.09867	0.09350	0.08961	0.10752	0.10447
0.10697	0.14698	0.07947	0.08923	0.11980	0.10935	0.10368	0.11922	0.13217

Percentile 5% from 780 data=			39			
t 5 days=	:	2,236067977				
t 10 days=	:	3,16227766				
t 20 days=	:	4,472135955				
Historical Simulation Calculation						
Code	Price	Percentile data-39	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	6.450,00	-0,03718	-239,805	-536,2193	-758,32864	-1072,4386
CPIN	3.345,00	-0,05380	-179,97	-402,4253	-569,11527	-804,85054
GGRM	58.350,00	-0,03440	-2007,32	-4488,511	-6347,7135	-8977,0225
ICBP	14.450,00	-0,03348	-483,727	-1081,647	-1529,6796	-2163,2937
INDF	6.200,00	-0,03031	-187,893	-420,1419	-594,17036	-840,28379
INTP	19.700,00	-0,03792	-747,009	-1670,363	-2362,2496	-3340,7255
KLBF	1.335,00	-0,03534	-47,1781	-105,4933	-149,19011	-210,98667

SMGR	11.050,00	-0,04032	-445,547	-996,2729	-1408,9426	-1992,5457
UNVR	36.700,00	-0,03237	-1187,81	-2656,015	-3756,1722	-5312,0297

Appendix 9, VaR Monte Carlo Simulation Calculation

Future Return in one year

	ASII	CPIN	GGRM	ICBP	INDF	INTP	KLBF	SMGR	UNVR
1	-0.000961	-0.000949	-0.000957	-0.00096	-0.001129	-0.000799	-0.000846	-0.000931	-0.001125
2	-0.000889	-0.000907	-0.000883	-0.000872	-0.000879	-0.000798	-0.000825	-0.000826	-0.000857
3	-0.000848	-0.000902	-0.000841	-0.000852	-0.000796	-0.000785	-0.000812	-0.000818	-0.000853
4	-0.000815	-0.00086	-0.000837	-0.000828	-0.000789	-0.000762	-0.000764	-0.000815	-0.000853
5	-0.000795	-0.000833	-0.000822	-0.000812	-0.000775	-0.000751	-0.000755	-0.000796	-0.000845
6	-0.000788	-0.000824	-0.000813	-0.000809	-0.00075	-0.000743	-0.000754	-0.00078	-0.000811
7	-0.000785	-0.0008	-0.000784	-0.000801	-0.00074	-0.000736	-0.000741	-0.000776	-0.000799
8	-0.000782	-0.000779	-0.000777	-0.000785	-0.000738	-0.000727	-0.000737	-0.000776	-0.000787
9	-0.000768	-0.000779	-0.000764	-0.000779	-0.000738	-0.000715	-0.000726	-0.000769	-0.000782
10	-0.000761	-0.000771	-0.000761	-0.000777	-0.000721	-0.000708	-0.000709	-0.000756	-0.00078
11	-0.000756	-0.000762	-0.000742	-0.000769	-0.000717	-0.000706	-0.000701	-0.000756	-0.00078
12	-0.000756	-0.000761	-0.000733	-0.000763	-0.000709	-0.0007	-0.000701	-0.000744	-0.000779
13	-0.000754	-0.000754	-0.000728	-0.000761	-0.000704	-0.000698	-0.000701	-0.000744	-0.000767
14	-0.000738	-0.000749	-0.000707	-0.000751	-0.000702	-0.000696	-0.000691	-0.000731	-0.000746
15	-0.000736	-0.000743	-0.000693	-0.000744	-0.000702	-0.000695	-0.000687	-0.000727	-0.000742
16	-0.000735	-0.000718	-0.000692	-0.000738	-0.000701	-0.000692	-0.000685	-0.000724	-0.000736
17	-0.000734	-0.000718	-0.000684	-0.000733	-0.000696	-0.000688	-0.000681	-0.000713	-0.00073
18	-0.000733	-0.000714	-0.00068	-0.000728	-0.000691	-0.000672	-0.000672	-0.00071	-0.000724
19	-0.000726	-0.000712	-0.000677	-0.000723	-0.000688	-0.000671	-0.000671	-0.000709	-0.000724
20	-0.000724	-0.000711	-0.000674	-0.000718	-0.000687	-0.00067	-0.000658	-0.000704	-0.000699
21	-0.000723	-0.000708	-0.00066	-0.000713	-0.000681	-0.000663	-0.000649	-0.0007	-0.000693
22	-0.000714	-0.000708	-0.000656	-0.000711	-0.000678	-0.000651	-0.000648	-0.000687	-0.00069

23	-0.000708	-0.000707	-0.000654	-0.000698	-0.000677	-0.000649	-0.000644	-0.000673	-0.000685
24	-0.000706	-0.0007	-0.000648	-0.000697	-0.000677	-0.000644	-0.000642	-0.000673	-0.00067
25	-0.000696	-0.000698	-0.000638	-0.000676	-0.000675	-0.000642	-0.000641	-0.000665	-0.000669
26	-0.000695	-0.000692	-0.000636	-0.000675	-0.000672	-0.000629	-0.000639	-0.000664	-0.000666
27	-0.000683	-0.000691	-0.00063	-0.000662	-0.000669	-0.000623	-0.000636	-0.000656	-0.000662
28	-0.000679	-0.000675	-0.000629	-0.000658	-0.000668	-0.000621	-0.000629	-0.000655	-0.000661
29	-0.000673	-0.000667	-0.000629	-0.000657	-0.000663	-0.000619	-0.000626	-0.000651	-0.000655
30	-0.00066	-0.000665	-0.000628	-0.000656	-0.000663	-0.000615	-0.000624	-0.000649	-0.000646
31	-0.000658	-0.000665	-0.000628	-0.000645	-0.000659	-0.0006	-0.000617	-0.000648	-0.000645
32	-0.000643	-0.000664	-0.000627	-0.00064	-0.000653	-0.000597	-0.000601	-0.000647	-0.000641
33	-0.00064	-0.000662	-0.000626	-0.000639	-0.00065	-0.000596	-0.000599	-0.000646	-0.000625
34	-0.000627	-0.000659	-0.000622	-0.000634	-0.00065	-0.000591	-0.000598	-0.000645	-0.000617
35	-0.000626	-0.000655	-0.000621	-0.000633	-0.000648	-0.000587	-0.000598	-0.000641	-0.000616
36	-0.000624	-0.000648	-0.00062	-0.000632	-0.000648	-0.000583	-0.00059	-0.000635	-0.000615
37	-0.000618	-0.000647	-0.000619	-0.000623	-0.000646	-0.000582	-0.000585	-0.000635	-0.000613
38	-0.000618	-0.000646	-0.000618	-0.00062	-0.000641	-0.000582	-0.000582	-0.000628	-0.000613
39	-0.000617	-0.000637	-0.000618	-0.000618	-0.000639	-0.000581	-0.000582	-0.000625	-0.000613
40	-0.000616	-0.000635	-0.000617	-0.000616	-0.000634	-0.000578	-0.000581	-0.00062	-0.000606
41	-0.000616	-0.000632	-0.000614	-0.000614	-0.000633	-0.000574	-0.000581	-0.000618	-0.000605
42	-0.000612	-0.000628	-0.000612	-0.000614	-0.000631	-0.000573	-0.000577	-0.000615	-0.000604
43	-0.00061	-0.000624	-0.000605	-0.000613	-0.00063	-0.000568	-0.000575	-0.000615	-0.000599
44	-0.000606	-0.000614	-0.000601	-0.000612	-0.000629	-0.000567	-0.000574	-0.000614	-0.000597
45	-0.000606	-0.000611	-0.000597	-0.000612	-0.000626	-0.000566	-0.00057	-0.000613	-0.000585
46	-0.000602	-0.00061	-0.000596	-0.00061	-0.000625	-0.000565	-0.000569	-0.000608	-0.000585
47	-0.000602	-0.000608	-0.000596	-0.000601	-0.000623	-0.000565	-0.000566	-0.000606	-0.000584

48	-0.000602	-0.000607	-0.000593	-0.0006	-0.000621	-0.000561	-0.000565	-0.000606	-0.000584
49	-0.000599	-0.000604	-0.000591	-0.000597	-0.00062	-0.000556	-0.000563	-0.000601	-0.000582
50	-0.000599	-0.000595	-0.000591	-0.000596	-0.00062	-0.000556	-0.000562	-0.000595	-0.000582
51	-0.000598	-0.000594	-0.000589	-0.000594	-0.000617	-0.000553	-0.000559	-0.000593	-0.00058
52	-0.000594	-0.000594	-0.000585	-0.000589	-0.000614	-0.000551	-0.000557	-0.00059	-0.000579
53	-0.000592	-0.000594	-0.000585	-0.000585	-0.000614	-0.000551	-0.000555	-0.000587	-0.000575
54	-0.000592	-0.000593	-0.000583	-0.000585	-0.000607	-0.00055	-0.000552	-0.000587	-0.000573
55	-0.000589	-0.000589	-0.000571	-0.000584	-0.000602	-0.000541	-0.000551	-0.000587	-0.000572
56	-0.000589	-0.000582	-0.000569	-0.000584	-0.000597	-0.000538	-0.000539	-0.000586	-0.000572
57	-0.000583	-0.000582	-0.000564	-0.000578	-0.000594	-0.000538	-0.000538	-0.000584	-0.000565
58	-0.000582	-0.000576	-0.000561	-0.000578	-0.000592	-0.000536	-0.000537	-0.000583	-0.000562
59	-0.000568	-0.000574	-0.000559	-0.000575	-0.000587	-0.000533	-0.000534	-0.00058	-0.000555
60	-0.000568	-0.000574	-0.000558	-0.000573	-0.000587	-0.000531	-0.000534	-0.000578	-0.000554
61	-0.000564	-0.000573	-0.000558	-0.000567	-0.000585	-0.00053	-0.000533	-0.000576	-0.00055
62	-0.000562	-0.000571	-0.000556	-0.000567	-0.00058	-0.00053	-0.000531	-0.000576	-0.000546
63	-0.000559	-0.000568	-0.000554	-0.000562	-0.00057	-0.000529	-0.000529	-0.000571	-0.000542
64	-0.000559	-0.000567	-0.000549	-0.000562	-0.000568	-0.000529	-0.000528	-0.000568	-0.000542
65	-0.000554	-0.000566	-0.000541	-0.00056	-0.000565	-0.000527	-0.000527	-0.000568	-0.000542
66	-0.000552	-0.000564	-0.000539	-0.000558	-0.000565	-0.000517	-0.000526	-0.000563	-0.000541
67	-0.000552	-0.000555	-0.000539	-0.000558	-0.000561	-0.000517	-0.000524	-0.000563	-0.000539
68	-0.000549	-0.000554	-0.000537	-0.000556	-0.000561	-0.000514	-0.000523	-0.000558	-0.000539
69	-0.00054	-0.00055	-0.000534	-0.00055	-0.000559	-0.000502	-0.00052	-0.000558	-0.000537
70	-0.00054	-0.000549	-0.000529	-0.00055	-0.000559	-0.000501	-0.000516	-0.000558	-0.000537
71	-0.000536	-0.000549	-0.000527	-0.000545	-0.000554	-0.000499	-0.000516	-0.000558	-0.000535
72	-0.000535	-0.000545	-0.000524	-0.000541	-0.00055	-0.000498	-0.000516	-0.000548	-0.000535

73	-0.000532	-0.000545	-0.000522	-0.000537	-0.000546	-0.000496	-0.000515	-0.000548	-0.000535
74	-0.000531	-0.000541	-0.000522	-0.000535	-0.000544	-0.000492	-0.000515	-0.000543	-0.000534
75	-0.000525	-0.000538	-0.000521	-0.000535	-0.000542	-0.000492	-0.000513	-0.000541	-0.000531
76	-0.00052	-0.000537	-0.000518	-0.000533	-0.000542	-0.00049	-0.000513	-0.000537	-0.000531
77	-0.000518	-0.000533	-0.000513	-0.000532	-0.000538	-0.000488	-0.000507	-0.000532	-0.00053
78	-0.000517	-0.000533	-0.000511	-0.000531	-0.000534	-0.000486	-0.000506	-0.000531	-0.00053
79	-0.000515	-0.000533	-0.000505	-0.00053	-0.000531	-0.000482	-0.000506	-0.00053	-0.000528
80	-0.000511	-0.00053	-0.000505	-0.000529	-0.000528	-0.000478	-0.000505	-0.000526	-0.000528
81	-0.000511	-0.000528	-0.000505	-0.000527	-0.000524	-0.000477	-0.000503	-0.000522	-0.000528
82	-0.000509	-0.000523	-0.000504	-0.000523	-0.000524	-0.000473	-0.000502	-0.00051	-0.000526
83	-0.000508	-0.000523	-0.000501	-0.00052	-0.000521	-0.000471	-0.000497	-0.000507	-0.000524
84	-0.000506	-0.00052	-0.000499	-0.000519	-0.000514	-0.000471	-0.000493	-0.000506	-0.000523
85	-0.000505	-0.000519	-0.000499	-0.000519	-0.000512	-0.000469	-0.000493	-0.000505	-0.000515
86	-0.000504	-0.000518	-0.000497	-0.000519	-0.000511	-0.000463	-0.000491	-0.0005	-0.00051
87	-0.000503	-0.000517	-0.000495	-0.000519	-0.000507	-0.000454	-0.000489	-0.000497	-0.00051
88	-0.0005	-0.000514	-0.000493	-0.000517	-0.000507	-0.000452	-0.000488	-0.000497	-0.000507
89	-0.000499	-0.00051	-0.00049	-0.000514	-0.000504	-0.000451	-0.000485	-0.000496	-0.000506
90	-0.000498	-0.000506	-0.000489	-0.000507	-0.000504	-0.000448	-0.000483	-0.000494	-0.000506
91	-0.000494	-0.000503	-0.000484	-0.000504	-0.0005	-0.000442	-0.000483	-0.000492	-0.000503
92	-0.000488	-0.000498	-0.000481	-0.000504	-0.000497	-0.000442	-0.000481	-0.00049	-0.000501
93	-0.000482	-0.000496	-0.000477	-0.000504	-0.000496	-0.000442	-0.000481	-0.00049	-0.000501
94	-0.000481	-0.000496	-0.000476	-0.000504	-0.000495	-0.00044	-0.00048	-0.000485	-0.000499
95	-0.000481	-0.000493	-0.000474	-0.000503	-0.000495	-0.000436	-0.000477	-0.00048	-0.000499
96	-0.00048	-0.000491	-0.000473	-0.000502	-0.000494	-0.000436	-0.000471	-0.000479	-0.000496
97	-0.000476	-0.00049	-0.000472	-0.0005	-0.000493	-0.000435	-0.000471	-0.000478	-0.000492

98	-0.000469	-0.000485	-0.000472	-0.0005	-0.000491	-0.000435	-0.000471	-0.000474	-0.000492
99	-0.000469	-0.000483	-0.000471	-0.000499	-0.000488	-0.000433	-0.000469	-0.000474	-0.000492
100	-0.000466	-0.000483	-0.000469	-0.000494	-0.000488	-0.000433	-0.000469	-0.000472	-0.000488
101	-0.000466	-0.000481	-0.000467	-0.000494	-0.000486	-0.000432	-0.000468	-0.00047	-0.000479
102	-0.000461	-0.00048	-0.000466	-0.000493	-0.000486	-0.000431	-0.000463	-0.00047	-0.000479
103	-0.000459	-0.000475	-0.000464	-0.000492	-0.000486	-0.00043	-0.000462	-0.000469	-0.000479
104	-0.000455	-0.000475	-0.000463	-0.000487	-0.000485	-0.000427	-0.000458	-0.000469	-0.000479
105	-0.000455	-0.000473	-0.000463	-0.000487	-0.000485	-0.000423	-0.000458	-0.000464	-0.000478
106	-0.000454	-0.000472	-0.000459	-0.000486	-0.000482	-0.000422	-0.000457	-0.000462	-0.000476
107	-0.00045	-0.00047	-0.000457	-0.000483	-0.000482	-0.000421	-0.000455	-0.00046	-0.000475
108	-0.00045	-0.000465	-0.000452	-0.000483	-0.00048	-0.000418	-0.000455	-0.000459	-0.000474
109	-0.000448	-0.000453	-0.000451	-0.000483	-0.000474	-0.000417	-0.000452	-0.000454	-0.000473
110	-0.000448	-0.000452	-0.00045	-0.000477	-0.000473	-0.000417	-0.000449	-0.000453	-0.000472
111	-0.000446	-0.000447	-0.000447	-0.000474	-0.000473	-0.000417	-0.000447	-0.000452	-0.000471
112	-0.000443	-0.000444	-0.000441	-0.000473	-0.000472	-0.000414	-0.000443	-0.000451	-0.000471
113	-0.00044	-0.000444	-0.00044	-0.000473	-0.000471	-0.000413	-0.000443	-0.000449	-0.00047
114	-0.000436	-0.000443	-0.00044	-0.000471	-0.000469	-0.000411	-0.000443	-0.000448	-0.000469
115	-0.000436	-0.000443	-0.000439	-0.00047	-0.000465	-0.000406	-0.000442	-0.000447	-0.000467
116	-0.000435	-0.000442	-0.000439	-0.000465	-0.000463	-0.000403	-0.000441	-0.000444	-0.000464
117	-0.000434	-0.000441	-0.000435	-0.000464	-0.000459	-0.000402	-0.000434	-0.000441	-0.000461
118	-0.000432	-0.000441	-0.000434	-0.000462	-0.000455	-0.000401	-0.000433	-0.00044	-0.000461
119	-0.000432	-0.000437	-0.000431	-0.000461	-0.000454	-0.000401	-0.000417	-0.000439	-0.00046
120	-0.000426	-0.000437	-0.000431	-0.00046	-0.000454	-0.000398	-0.000417	-0.000438	-0.000459
121	-0.000424	-0.000432	-0.000427	-0.000457	-0.000453	-0.000396	-0.000415	-0.000436	-0.000458
122	-0.000421	-0.000429	-0.000424	-0.000456	-0.00045	-0.000395	-0.000414	-0.000435	-0.000457

123	-0.00042	-0.000427	-0.000424	-0.000453	-0.000447	-0.000394	-0.000414	-0.000428	-0.000457
124	-0.000416	-0.000426	-0.000422	-0.000451	-0.000445	-0.000394	-0.000413	-0.000426	-0.000456
125	-0.000415	-0.000423	-0.000422	-0.000451	-0.000442	-0.000387	-0.000412	-0.000426	-0.000456
126	-0.000413	-0.000422	-0.000421	-0.00045	-0.00044	-0.000387	-0.00041	-0.000418	-0.000455
127	-0.000411	-0.00042	-0.00042	-0.000445	-0.000439	-0.000386	-0.00041	-0.000415	-0.000452
128	-0.000408	-0.00042	-0.000417	-0.00044	-0.000438	-0.000383	-0.000408	-0.000413	-0.000452
129	-0.000403	-0.000419	-0.000415	-0.000434	-0.000438	-0.000383	-0.000407	-0.000411	-0.000451
130	-0.000403	-0.000418	-0.000414	-0.000434	-0.000438	-0.000382	-0.000406	-0.000411	-0.000447
131	-0.000402	-0.000415	-0.000413	-0.000433	-0.000431	-0.000382	-0.000405	-0.000409	-0.000447
132	-0.000398	-0.000415	-0.000411	-0.000432	-0.00043	-0.000382	-0.000404	-0.000407	-0.000444
133	-0.000397	-0.000413	-0.000406	-0.000431	-0.000428	-0.000378	-0.000403	-0.000405	-0.000443
134	-0.000397	-0.000413	-0.000406	-0.000429	-0.000428	-0.000376	-0.000403	-0.000404	-0.000443
135	-0.000395	-0.000412	-0.000401	-0.000427	-0.000428	-0.000375	-0.000403	-0.000403	-0.000438
136	-0.000394	-0.000412	-0.0004	-0.000425	-0.000424	-0.000375	-0.000401	-0.000402	-0.000432
137	-0.000393	-0.000411	-0.000399	-0.000424	-0.000422	-0.000375	-0.000401	-0.000402	-0.000431
138	-0.000391	-0.00041	-0.000398	-0.000421	-0.000417	-0.000373	-0.000399	-0.000394	-0.000429
139	-0.00039	-0.000409	-0.000398	-0.00042	-0.000415	-0.000373	-0.000398	-0.000393	-0.000427
140	-0.000389	-0.000406	-0.000397	-0.000419	-0.000412	-0.000372	-0.000394	-0.000391	-0.000426
141	-0.000388	-0.000405	-0.000396	-0.000419	-0.000409	-0.000371	-0.000393	-0.000389	-0.000426
142	-0.000387	-0.000404	-0.000396	-0.000418	-0.000407	-0.000369	-0.000383	-0.000389	-0.000417
143	-0.000387	-0.000404	-0.000392	-0.000416	-0.000401	-0.000366	-0.000382	-0.000384	-0.000417
144	-0.000386	-0.000403	-0.000389	-0.000415	-0.000399	-0.000366	-0.00038	-0.000383	-0.000413
145	-0.000385	-0.000402	-0.000388	-0.000414	-0.000399	-0.000364	-0.000379	-0.000382	-0.000412
146	-0.000378	-0.000401	-0.000385	-0.000413	-0.000398	-0.000362	-0.000377	-0.00038	-0.000411
147	-0.000375	-0.0004	-0.000378	-0.000413	-0.000392	-0.000362	-0.000375	-0.00038	-0.000408

148	-0.000373	-0.000394	-0.000377	-0.000413	-0.000391	-0.000359	-0.000373	-0.000377	-0.000405
149	-0.00037	-0.000393	-0.000373	-0.000411	-0.00039	-0.000359	-0.00037	-0.000376	-0.000405
150	-0.000369	-0.000388	-0.000366	-0.000407	-0.000389	-0.000355	-0.000367	-0.000376	-0.000403
151	-0.000368	-0.000388	-0.000366	-0.000407	-0.000388	-0.000354	-0.000365	-0.000373	-0.000403
152	-0.000366	-0.000387	-0.000364	-0.000407	-0.000385	-0.000352	-0.000363	-0.000372	-0.0004
153	-0.000365	-0.000384	-0.000361	-0.000405	-0.000383	-0.000351	-0.000363	-0.000371	-0.000398
154	-0.000363	-0.00038	-0.000359	-0.000403	-0.000381	-0.000351	-0.000362	-0.000368	-0.000396
155	-0.000361	-0.000376	-0.000359	-0.000402	-0.00038	-0.000349	-0.00036	-0.000367	-0.000395
156	-0.00036	-0.000374	-0.000356	-0.0004	-0.000379	-0.000348	-0.000358	-0.000367	-0.000392
157	-0.000359	-0.000366	-0.000353	-0.000399	-0.000379	-0.000343	-0.000355	-0.000362	-0.000389
158	-0.000358	-0.000366	-0.000347	-0.000398	-0.000376	-0.000343	-0.000355	-0.000362	-0.000387
159	-0.000355	-0.000365	-0.000345	-0.000393	-0.000375	-0.000336	-0.000354	-0.000361	-0.000387
160	-0.000354	-0.000364	-0.000344	-0.000393	-0.000371	-0.000335	-0.000353	-0.00036	-0.000386
161	-0.000351	-0.000363	-0.000337	-0.000388	-0.000368	-0.000333	-0.000352	-0.000357	-0.000386
162	-0.00035	-0.000355	-0.000334	-0.000383	-0.000368	-0.000332	-0.00035	-0.000349	-0.000383
163	-0.000348	-0.000354	-0.000334	-0.000382	-0.000366	-0.000331	-0.000345	-0.000348	-0.00038
164	-0.000344	-0.000353	-0.000332	-0.000382	-0.000366	-0.000329	-0.000342	-0.000348	-0.00038
165	-0.000342	-0.000351	-0.000332	-0.000382	-0.000362	-0.000327	-0.000341	-0.000348	-0.000379
166	-0.000342	-0.000349	-0.000332	-0.000379	-0.000362	-0.000324	-0.000338	-0.000348	-0.000379
167	-0.000341	-0.000346	-0.000331	-0.000379	-0.000361	-0.000323	-0.000335	-0.000346	-0.000378
168	-0.000339	-0.000343	-0.000329	-0.000373	-0.000361	-0.000321	-0.000333	-0.000346	-0.000377
169	-0.000338	-0.000341	-0.000325	-0.000373	-0.00036	-0.00032	-0.000331	-0.000346	-0.000377
170	-0.000337	-0.00034	-0.000325	-0.000373	-0.000358	-0.00032	-0.000328	-0.000343	-0.000377
171	-0.000336	-0.000333	-0.000325	-0.00037	-0.00035	-0.000316	-0.000328	-0.000343	-0.000373
172	-0.000333	-0.000332	-0.000323	-0.00037	-0.000343	-0.000312	-0.000327	-0.000339	-0.00037

173	-0.000331	-0.000331	-0.000318	-0.000367	-0.000343	-0.000311	-0.000327	-0.000336	-0.000368
174	-0.00033	-0.000326	-0.000314	-0.000366	-0.000342	-0.00031	-0.000323	-0.000328	-0.000352
175	-0.000328	-0.000325	-0.000312	-0.000364	-0.000339	-0.000309	-0.000323	-0.000327	-0.000346
176	-0.000324	-0.000325	-0.000311	-0.000362	-0.000334	-0.000307	-0.000323	-0.000326	-0.000338
177	-0.000323	-0.000322	-0.000309	-0.000362	-0.000326	-0.000304	-0.00032	-0.000326	-0.000334
178	-0.000321	-0.000316	-0.000308	-0.000361	-0.000324	-0.000303	-0.00032	-0.000324	-0.000334
179	-0.000319	-0.000315	-0.000306	-0.000361	-0.000324	-0.000303	-0.000315	-0.000322	-0.000331
180	-0.000317	-0.000313	-0.000304	-0.000361	-0.000319	-0.000303	-0.000312	-0.000315	-0.00033
181	-0.000317	-0.000313	-0.000304	-0.00036	-0.000318	-0.000303	-0.000308	-0.000308	-0.000329
182	-0.000313	-0.000313	-0.000304	-0.000353	-0.000317	-0.000302	-0.000307	-0.000302	-0.000329
183	-0.000311	-0.000306	-0.000293	-0.000349	-0.000315	-0.000297	-0.000307	-0.0003	-0.000328
184	-0.000308	-0.000306	-0.000292	-0.000346	-0.000315	-0.000297	-0.000306	-0.000297	-0.000326
185	-0.000306	-0.000305	-0.000292	-0.000344	-0.000305	-0.000293	-0.000305	-0.000297	-0.000325
186	-0.000304	-0.000302	-0.000286	-0.000344	-0.000304	-0.000293	-0.000305	-0.000297	-0.000321
187	-0.000303	-0.0003	-0.000282	-0.000343	-0.000303	-0.000291	-0.000301	-0.000296	-0.000321
188	-0.000301	-0.000299	-0.000278	-0.000341	-0.000302	-0.00029	-0.000297	-0.000295	-0.000319
189	-0.0003	-0.000295	-0.000277	-0.000336	-0.000302	-0.000281	-0.000297	-0.000292	-0.000311
190	-0.000299	-0.000294	-0.000276	-0.000331	-0.000302	-0.00028	-0.000295	-0.000291	-0.00031
191	-0.000298	-0.000287	-0.000276	-0.000326	-0.000302	-0.000278	-0.000286	-0.000291	-0.000306
192	-0.000297	-0.000287	-0.000276	-0.000322	-0.0003	-0.000275	-0.000284	-0.00029	-0.000297
193	-0.000294	-0.000283	-0.000272	-0.000319	-0.000299	-0.000275	-0.00028	-0.000289	-0.000295
194	-0.000293	-0.00028	-0.000262	-0.000305	-0.000297	-0.000272	-0.000279	-0.000287	-0.000293
195	-0.000285	-0.000278	-0.000262	-0.000303	-0.000296	-0.000266	-0.000277	-0.000286	-0.000289
196	-0.000277	-0.000275	-0.000262	-0.0003	-0.000291	-0.000265	-0.000274	-0.000285	-0.000289
197	-0.000266	-0.00027	-0.00026	-0.000297	-0.000289	-0.000261	-0.000274	-0.000282	-0.000274

198	-0.000264	-0.000269	-0.000259	-0.000293	-0.000287	-0.000254	-0.00027	-0.000281	-0.000271
199	-0.000264	-0.000269	-0.000257	-0.00029	-0.000286	-0.000252	-0.000268	-0.00028	-0.00027
200	-0.000259	-0.000268	-0.000252	-0.000289	-0.000284	-0.000248	-0.000263	-0.000279	-0.000266
201	-0.000252	-0.000268	-0.000251	-0.000288	-0.000284	-0.000243	-0.000261	-0.000273	-0.000265
202	-0.000249	-0.000267	-0.000245	-0.000281	-0.000283	-0.000241	-0.00026	-0.000272	-0.00026
203	-0.000247	-0.000267	-0.000245	-0.000281	-0.000282	-0.000241	-0.000259	-0.000267	-0.000253
204	-0.000244	-0.000264	-0.000242	-0.000279	-0.000277	-0.000238	-0.000255	-0.000258	-0.000252
205	-0.000243	-0.000257	-0.00024	-0.000277	-0.000275	-0.000238	-0.000253	-0.000255	-0.000251
206	-0.00024	-0.000256	-0.000239	-0.000274	-0.000274	-0.000223	-0.000247	-0.000252	-0.000247
207	-0.000238	-0.000255	-0.000238	-0.000271	-0.00027	-0.000221	-0.000246	-0.000249	-0.000247
208	-0.000237	-0.000253	-0.000238	-0.000267	-0.000263	-0.00022	-0.000246	-0.000248	-0.000246
209	-0.000235	-0.000252	-0.000238	-0.000267	-0.000262	-0.00022	-0.000246	-0.000247	-0.000237
210	-0.000232	-0.000252	-0.000217	-0.000265	-0.000248	-0.000214	-0.000245	-0.000246	-0.000227
211	-0.00023	-0.000252	-0.000215	-0.000265	-0.000248	-0.00021	-0.000243	-0.000243	-0.000226
212	-0.000228	-0.000252	-0.000207	-0.000253	-0.00024	-0.000198	-0.000241	-0.000239	-0.000222
213	-0.000227	-0.00025	-0.000204	-0.000253	-0.000236	-0.000196	-0.000237	-0.000237	-0.000218
214	-0.000227	-0.000249	-0.000203	-0.000251	-0.000234	-0.000188	-0.000237	-0.000237	-0.000214
215	-0.000226	-0.000243	-0.000202	-0.000247	-0.000233	-0.000186	-0.000236	-0.000228	-0.000213
216	-0.000226	-0.000243	-0.000202	-0.000246	-0.00023	-0.000184	-0.000235	-0.000226	-0.000213
217	-0.00022	-0.000239	-0.0002	-0.000241	-0.00023	-0.000182	-0.00023	-0.000223	-0.000211
218	-0.000216	-0.000234	-0.000199	-0.000237	-0.000228	-0.000181	-0.000229	-0.000221	-0.000205
219	-0.000216	-0.000225	-0.000196	-0.000235	-0.000221	-0.000172	-0.000225	-0.00022	-0.000196
220	-0.00021	-0.000224	-0.000194	-0.000227	-0.000219	-0.000171	-0.000222	-0.000218	-0.000193
221	-0.0002	-0.000224	-0.000193	-0.000226	-0.000219	-0.000171	-0.000219	-0.000215	-0.000189
222	-0.000198	-0.000209	-0.000193	-0.000217	-0.000217	-0.00017	-0.000209	-0.000215	-0.000187

223	-0.000193	-0.000208	-0.000192	-0.000216	-0.000216	-0.000168	-0.000205	-0.000203	-0.000184
224	-0.000192	-0.000201	-0.000185	-0.000211	-0.000203	-0.000165	-0.000198	-0.0002	-0.000178
225	-0.000192	-0.000198	-0.00018	-0.000206	-0.000201	-0.000163	-0.000187	-0.000199	-0.000172
226	-0.000187	-0.000195	-0.000179	-0.000197	-0.000187	-0.00016	-0.00018	-0.000193	-0.000166
227	-0.000184	-0.000194	-0.000177	-0.000188	-0.000186	-0.000156	-0.000176	-0.000192	-0.000163
228	-0.000183	-0.000188	-0.000171	-0.000183	-0.000181	-0.000146	-0.000173	-0.000188	-0.000157
229	-0.000183	-0.000187	-0.000167	-0.000183	-0.000181	-0.000138	-0.00017	-0.000186	-0.000157
230	-0.000182	-0.000185	-0.000154	-0.000171	-0.000177	-0.000136	-0.000165	-0.000182	-0.000154
231	-0.000179	-0.000177	-0.000154	-0.000171	-0.000172	-0.000135	-0.000158	-0.000181	-0.000153
232	-0.000164	-0.000172	-0.000145	-0.000162	-0.000168	-0.00013	-0.000156	-0.000179	-0.00015
233	-0.000158	-0.000171	-0.000143	-0.000155	-0.00016	-0.000127	-0.000153	-0.000179	-0.00014
234	-0.000156	-0.000158	-0.000127	-0.000155	-0.000159	-0.000127	-0.000147	-0.000178	-0.000133
235	-0.000154	-0.00015	-0.000123	-0.000152	-0.000155	-0.000119	-0.000145	-0.000178	-0.000127
236	-0.000145	-0.000149	-0.000115	-0.000143	-0.000155	-0.000116	-0.000138	-0.000159	-0.000112
237	-0.000142	-0.000136	-0.000108	-0.00012	-0.000148	-0.00011	-0.000137	-0.000159	-0.000111
238	-0.000131	-0.000121	-0.000101	-0.000109	-0.000139	-0.000108	-0.000128	-0.000153	-0.000089
239	-0.000123	-0.000106	-0.000085	-0.000068	-0.000134	-0.000108	-0.000125	-0.000137	-0.000085
240	-0.00012	-0.000105	-0.000085	-0.000062	-0.000131	-0.000108	-0.000121	-0.000126	-0.000077
241	-0.00012	-0.000102	-0.00008	-0.00006	-0.00012	-0.000103	-0.00012	-0.000124	-0.000056
242	-0.000097	-0.000101	-0.000078	-0.000055	-0.000117	-0.000099	-0.000105	-0.000111	-0.000051
243	-0.000092	-0.000098	-0.000077	-0.00005	-0.000108	-0.000094	-0.000101	-0.000104	-0.000048
244	-0.000086	-0.000097	-0.000068	-0.000042	-0.000103	-0.000081	-0.000093	-0.000097	-0.00002
245	-0.000065	-0.00008	-0.000064	-0.00004	-0.000096	-0.000078	-0.000088	-0.000084	-0.000018
246	-0.000061	-0.000079	-0.00006	-0.000028	-0.000093	-0.000064	-0.000088	-0.000081	-0.000015
247	-0.000056	-0.000052	-0.000059	-0.000023	-0.000085	-0.000059	-0.000081	-0.000071	-0.000009

248	-0.000031	-0.000045	-0.000056	-0.000006	-0.000079	-0.00004	-0.00008	-0.000054	-0.000008
249	-0.000026	-0.000027	-0.000046	0.000003	-0.000068	0.000006	-0.000073	-0.000046	0.000016
250	-0.000022	-0.00002	-0.000044	0.000008	-0.000062	0.000013	-0.000056	-0.000026	0.000038
251	-0.000021	-0.000017	0.000005	0.000019	-0.000055	0.000039	-0.000051	-0.000012	0.000048
252	-0.000021	-0.000014	0.000027	0.000031	-0.000046	0.000056	-0.000043	0.000022	0.000092
253	-0.000013	0.000026	0.000028	0.000037	-0.000024	0.000101	-0.000023	0.000024	0.000155
254	0.000048	0.000052	0.000053	0.000041	-0.00002	0.000139	-0.000013	0.000068	0.000184
255	0.000166	0.000225	0.000065	0.000197	-0.000013	0.000146	0.000097	0.000071	0.000193

Code	Price	St.Dev Return	Variance	Average	Drift	Future Price	Percentile 5%	Var 1 day	Var 5 days	Var 10 days	Var 20 Days
ASII	6,450	0.02148	0.00046	-0.00018	-0.00042	6446.09086	-0.000754	-4.86	-10.8680786	-15.36978416	-21.73615721
CPIN	3,345	0.03082	0.00095	-0.00016	-0.00064	3343.43553	-0.000754	-2.520950388	-5.637016436	-7.971945095	-11.27403287
GGRM	58,350	0.02093	0.00044	0.00014	-0.00008	58324.60509	-0.000728	-42.4603125	-94.94414511	-134.2712977	-189.8882902
ICBP	14,450	0.02037	0.00041	0.00074	0.00053	14444.76185	-0.000761	-10.99246377	-24.57989622	-34.7612226	-49.15979244
INDF	6,200	0.02140	0.00046	0.00005	-0.00018	6196.80559	-0.000704	-4.362551136	-9.754960896	-13.795598	-19.50992179
INTP	19,700	0.02434	0.00059	-0.00011	-0.00041	19690.31316	-0.000698	-13.74383858	-30.73215735	-43.46183372	-61.46431469
KLBF	1,335	0.02128	0.00045	0.00026	0.00003	1334.41109	-0.000701	-0.935422177	-2.091667576	-2.958064654	-4.183335152
SMGR	11,050	0.02332	0.00054	-0.00047	-0.00074	11046.84854	-0.000744	-8.21885531	-18.37791917	-25.99030254	-36.75583834
UNVR	36,700	0.02087	0.00043	0.00066	0.00044	36691.96626	-0.000767	-28.14273812	-62.92907552	-88.99515207	-125.858151

Percentile 5% from 255 data=12.75
t 5 days :2.236067977
t 10 days:3.16227766
t 20 days:4.472135955

Appendix 10, Back Testing Calculation

	Actual Return	VCV Return	HS Return	MC return	Actual Return	VCV Return	HS Return	MC return
Date	ASII				CPIN			
02/02/2015	-99.3550	412.6000	-288.1373	-4.8587	-171.0828	308.2800	-203.3700	-2.5202
03/02/2015	-123.9825	405.9400	-283.4899	-4.8576	0.0000	308.2800	-203.3700	-2.5193
04/02/2015	100.6568	411.2700	-287.2078	-4.8567	0.0000	308.2800	-203.3700	-2.5187
05/02/2015	-172.9705	401.9500	-280.7015	-4.8541	80.8284	314.8000	-207.6800	-2.5180
06/02/2015	50.1600	404.6100	-282.5604	-4.8515	65.5475	320.1000	-211.1800	-2.5165
09/02/2015	-24.9218	403.2800	-281.6310	-4.8488	-39.7824	316.8400	-209.0200	-2.5155
10/02/2015	50.1725	405.9400	-283.4899	-4.8460	-29.8763	314.3900	-207.4100	-2.5145
11/02/2015	254.0475	419.2500	-292.7847	-4.8436	-69.3791	308.6900	-203.6400	-2.5135
12/02/2015	50.1653	421.9200	-294.6436	-4.8434	65.5655	313.9900	-207.1400	-2.5126
13/02/2015	25.0425	423.2500	-295.5731	-4.8399	9.9974	314.8000	-207.6800	-2.5100
16/02/2015	-148.5900	415.2600	-289.9962	-4.8374	-24.9275	312.7600	-206.3300	-2.5094
17/02/2015	0.0000	415.2600	-289.9962	-4.8359	-9.9833	311.9500	-205.8000	-2.5078
18/02/2015	151.4475	423.2500	-295.5731	-4.8339	-9.9953	311.1300	-205.2600	-2.5068
19/02/2015	0.0000	423.2500	-295.5731	-4.8314	0.0000	311.1300	-205.2600	-2.5053
20/02/2015	-99.3810	417.9200	-291.8552	-4.8295	-29.8637	308.6900	-203.6400	-2.5046
23/02/2015	50.1650	420.5900	-293.7141	-4.8288	30.1004	311.1300	-205.2600	-2.5037
24/02/2015	100.6400	425.9100	-297.4320	-4.8279	-4.9911	310.7200	-204.9900	-2.5030
25/02/2015	151.4270	433.9000	-303.0089	-4.8245	20.0692	312.3600	-206.0600	-2.5011
26/02/2015	-99.4175	428.5700	-299.2910	-4.8251	-5.0108	311.9500	-205.8000	-2.5002
27/02/2015	-197.5060	417.9200	-291.8552	-4.8238	-39.7804	308.6900	-203.6400	-2.4987
02/03/2015	25.0425	419.2500	-292.7847	-4.8205	45.2706	312.3600	-206.0600	-2.4972
03/03/2015	126.0000	425.9100	-297.4320	-4.8189	-34.8381	309.5000	-204.1800	-2.4959

04/03/2015	-124.0313	419.2500	-292.7847	-4.8149	5.0160	309.9100	-204.4500	-2.4953
05/03/2015	-24.9630	417.9200	-291.8552	-4.8124	-5.0094	309.5000	-204.1800	-2.4935
06/03/2015	228.1995	429.9000	-300.2205	-4.8097	25.0974	311.5400	-205.5300	-2.4925
09/03/2015	-124.0200	423.2500	-295.5731	-4.8084	-44.7338	307.8700	-203.1100	-2.4906
10/03/2015	25.0415	424.5800	-296.5026	-4.8055	-5.0141	307.4600	-202.8400	-2.4897
11/03/2015	-124.0300	417.9200	-291.8552	-4.8020	0.0000	307.4600	-202.8400	-2.4886
12/03/2015	50.1650	420.5900	-293.7141	-4.8003	-14.9825	306.2400	-202.0300	-2.4880
13/03/2015	-24.9638	419.2500	-292.7847	-4.7977	-54.6120	301.7500	-199.0700	-2.4874
16/03/2015	100.6445	424.5800	-296.5026	-4.7961	-79.1332	295.2300	-194.7700	-2.4861
17/03/2015	25.0400	425.9100	-297.4320	-4.7941	30.1125	297.6800	-196.3800	-2.4855
18/03/2015	-24.9618	424.5800	-296.5026	-4.7924	-29.8650	295.2300	-194.7700	-2.4838
19/03/2015	75.3480	428.5700	-299.2910	-4.7893	65.5930	300.5300	-198.2600	-2.4824
20/03/2015	50.1390	431.2300	-301.1499	-4.7864	-44.7356	296.8600	-195.8400	-2.4811
23/03/2015	75.3735	435.2300	-303.9384	-4.7838	-49.6497	292.7800	-193.1500	-2.4803
24/03/2015	-24.9390	433.9000	-303.0089	-4.7817	35.1625	295.6400	-195.0300	-2.4787
25/03/2015	50.1840	436.5600	-304.8678	-4.7802	-103.4528	287.0700	-189.3900	-2.4771
26/03/2015	-49.8780	433.9000	-303.0089	-4.7778	-170.5616	272.8000	-179.9700	-2.4761
27/03/2015	50.1840	436.5600	-304.8678	-4.7751	65.6425	278.1000	-183.4700	-2.4743
30/03/2015	176.8800	445.8700	-311.3742	-4.7734	80.9331	284.6300	-187.7700	-2.4736
31/03/2015	202.3700	456.5200	-318.8100	-4.7711	55.4438	289.1100	-190.7300	-2.4730
01/04/2015	-390.5198	435.2300	-303.9384	-4.7698	-108.2712	280.1400	-184.8100	-2.4721
02/04/2015	-99.4033	429.9000	-300.2205	-4.7676	-64.3670	274.8400	-181.3200	-2.4713
03/04/2015	0.0000	429.9000	-300.2205	-4.7657	0.0000	274.8400	-181.3200	-2.4691
06/04/2015	125.9520	436.5600	-304.8678	-4.7638	55.4508	279.3300	-184.2700	-2.4681
07/04/2015	-49.8780	433.9000	-303.0089	-4.7629	195.1739	294.8200	-194.5000	-2.4676

08/04/2015	-173.1373	424.5800	-296.5026	-4.7609	15.0282	296.0400	-195.3000	-2.4656
09/04/2015	176.9365	433.9000	-303.0089	-4.7597	40.2232	299.3100	-197.4600	-2.4641
10/04/2015	0.0000	433.9000	-303.0089	-4.7574	25.0891	301.3500	-198.8000	-2.4635
13/04/2015	25.0155	435.2300	-303.9384	-4.7539	-156.4945	288.3000	-190.1900	-2.4629
14/04/2015	25.0100	436.5600	-304.8678	-4.7525	4.9914	288.7000	-190.4600	-2.4621
15/04/2015	-24.9338	435.2300	-303.9384	-4.7516	30.1308	291.1500	-192.0800	-2.4612
16/04/2015	-124.0505	428.5700	-299.2910	-4.7495	111.6880	300.1200	-197.9900	-2.4598
17/04/2015	-74.6460	424.5800	-296.5026	-4.7488	-84.0152	293.1900	-193.4200	-2.4585
20/04/2015	-270.1930	409.9400	-286.2783	-4.7478	-64.4225	287.8900	-189.9200	-2.4573
21/04/2015	228.2400	421.9200	-294.6436	-4.7455	40.2339	291.1500	-192.0800	-2.4560
22/04/2015	-24.9640	420.5900	-293.7141	-4.7432	-93.7208	283.4000	-186.9600	-2.4547
23/04/2015	0.0000	420.5900	-293.7141	-4.7414	-49.6283	279.3300	-184.2700	-2.4541
24/04/2015	-24.9638	419.2500	-292.7847	-4.7375	0.0000	279.3300	-184.2700	-2.4535
27/04/2015	-413.3260	396.6300	-276.9836	-4.7365	-189.3426	263.4200	-173.7800	-2.4520
28/04/2015	-74.6350	392.6400	-274.1952	-4.7350	-98.4385	255.2700	-168.4000	-2.4509
29/04/2015	-269.8000	377.9900	-263.9709	-4.7337	-174.7285	240.5900	-158.7200	-2.4495
30/04/2015	-245.5725	364.6800	-254.6762	-4.7319	-112.7196	231.2100	-152.5300	-2.4483
01/05/2015	0.0000	364.6800	-254.6762	-4.7296	0.0000	231.2100	-152.5300	-2.4466
04/05/2015	254.5350	377.9900	-263.9709	-4.7273	-19.9302	229.5800	-151.4500	-2.4459
05/05/2015	177.1463	387.3100	-270.4773	-4.7251	65.7504	234.8800	-154.9500	-2.4446
06/05/2015	75.4110	391.3000	-273.2657	-4.7231	-14.9553	233.6500	-154.1400	-2.4436
07/05/2015	-148.4640	383.3200	-267.6888	-4.7218	-160.1640	220.2000	-145.2700	-2.4431
08/05/2015	202.7600	393.9700	-275.1246	-4.7188	91.4841	227.5400	-150.1100	-2.4417
11/05/2015	-74.6418	389.9700	-272.3362	-4.7176	132.9768	238.1400	-157.1000	-2.4408
12/05/2015	50.1500	392.6400	-274.1952	-4.7143	238.8330	256.9000	-169.4800	-2.4399

13/05/2015	151.4783	400.6200	-279.7720	-4.7114	65.6503	262.2000	-172.9800	-2.4396
14/05/2015	0.0000	400.6200	-279.7720	-4.7088	0.0000	262.2000	-172.9800	-2.4382
15/05/2015	-24.9750	399.2900	-278.8425	-4.7078	-24.9139	260.1600	-171.6300	-2.4366
18/05/2015	50.1320	401.9500	-280.7015	-4.7065	-78.9940	253.6400	-167.3300	-2.4355
19/05/2015	151.4590	409.9400	-286.2783	-4.7040	25.1114	255.6700	-168.6700	-2.4342
20/05/2015	151.4265	417.9200	-291.8552	-4.7018	15.0255	256.9000	-169.4800	-2.4336
21/05/2015	-24.9618	416.5900	-290.9257	-4.6995	25.1143	258.9400	-170.8200	-2.4330
22/05/2015	-245.9603	403.2800	-281.6310	-4.6978	30.1270	261.3800	-172.4400	-2.4320
25/05/2015	0.0000	403.2800	-281.6310	-4.6957	86.1322	268.3200	-177.0100	-2.4314
26/05/2015	-74.6250	399.2900	-278.8425	-4.6935	75.8471	274.4300	-181.0500	-2.4305
27/05/2015	-74.6213	395.3000	-276.0541	-4.6906	-122.6340	264.2400	-174.3200	-2.4290
28/05/2015	-49.8550	392.6400	-274.1952	-4.6891	-9.9807	263.4200	-173.7800	-2.4283
29/05/2015	-74.6060	388.6400	-271.4067	-4.6860	-88.7364	256.0800	-168.9400	-2.4279
01/06/2015	25.0515	389.9700	-272.3362	-4.6845	50.4020	260.1600	-171.6300	-2.4264
02/06/2015	0.0000	389.9700	-272.3362	-4.6826	0.0000	260.1600	-171.6300	-2.4251
03/06/2015	-269.8035	375.3300	-262.1120	-4.6808	-132.0982	249.1500	-164.3700	-2.4241
04/06/2015	-24.9388	374.0000	-261.1825	-4.6794	-39.7377	245.8900	-162.2200	-2.4230
05/06/2015	-24.9900	372.6700	-260.2530	-4.6776	-59.3955	240.9900	-158.9900	-2.4220
08/06/2015	-74.5823	368.6800	-257.4646	-4.6763	-83.7753	234.0600	-154.4100	-2.4207
09/06/2015	-74.5965	364.6800	-254.6762	-4.6735	-54.4703	229.5800	-151.4500	-2.4191
10/06/2015	0.0000	364.6800	-254.6762	-4.6711	86.2750	236.5100	-156.0300	-2.4181
11/06/2015	100.7055	370.0100	-258.3941	-4.6690	70.8345	242.2200	-159.7900	-2.4172
12/06/2015	126.1473	376.6600	-263.0415	-4.6670	-34.7798	239.3600	-157.9100	-2.4157
15/06/2015	-221.3920	364.6800	-254.6762	-4.6654	-160.2722	225.9100	-149.0300	-2.4151
16/06/2015	126.1080	371.3400	-259.3236	-4.6627	96.6078	233.6500	-154.1400	-2.4142

17/06/2015	25.0600	372.6700	-260.2530	-4.6610	81.1053	240.1800	-158.4500	-2.4130
18/06/2015	25.0793	374.0000	-261.1825	-4.6595	15.0368	241.4000	-159.2600	-2.4126
19/06/2015	25.0275	375.3300	-262.1120	-4.6567	91.3475	248.7400	-164.1000	-2.4111
22/06/2015	-49.8400	372.6700	-260.2530	-4.6552	-54.5090	244.2600	-161.1400	-2.4101
23/06/2015	-172.8090	363.3500	-253.7467	-4.6539	-103.1441	235.6900	-155.4900	-2.4098
24/06/2015	126.1425	370.0100	-258.3941	-4.6518	153.8240	247.9300	-163.5600	-2.4094
25/06/2015	-99.2565	364.6800	-254.6762	-4.6503	-193.2620	231.6200	-152.8000	-2.4084
26/06/2015	-24.9795	363.3500	-253.7467	-4.6477	-34.7820	228.7600	-150.9200	-2.4074
29/06/2015	50.1875	366.0200	-255.6057	-4.6464	-64.2530	223.4600	-147.4200	-2.4070
30/06/2015	202.9110	376.6600	-263.0415	-4.6437	10.0100	224.2800	-147.9600	-2.4063
01/07/2015	-49.8073	374.0000	-261.1825	-4.6415	25.1138	226.3200	-149.3000	-2.4053
02/07/2015	50.1618	376.6600	-263.0415	-4.6399	25.1160	228.3500	-150.6500	-2.4048
03/07/2015	-24.9570	375.3300	-262.1120	-4.6385	86.2904	235.2900	-155.2200	-2.4037
06/07/2015	-49.8400	372.6700	-260.2530	-4.6365	-29.8348	232.8400	-153.6100	-2.4026
07/07/2015	-99.2910	367.3500	-256.5351	-4.6332	-14.9668	231.6200	-152.8000	-2.4020
08/07/2015	-245.3850	354.0400	-247.2404	-4.6329	-117.4224	221.8300	-146.3400	-2.4008
09/07/2015	0.0000	354.0400	-247.2404	-4.6302	35.2365	224.6800	-148.2300	-2.3996
10/07/2015	25.0313	355.3700	-248.1699	-4.6286	-78.8323	218.1600	-143.9200	-2.3990
13/07/2015	126.1400	362.0200	-252.8172	-4.6266	25.1100	220.2000	-145.2700	-2.3985
14/07/2015	50.2105	364.6800	-254.6762	-4.6248	20.0736	221.8300	-146.3400	-2.3978
15/07/2015	-24.9795	363.3500	-253.7467	-4.6225	30.1675	224.2800	-147.9600	-2.3972
16/07/2015	0.0000	363.3500	-253.7467	-4.6219	0.0000	224.2800	-147.9600	-2.3961
17/07/2015	0.0000	363.3500	-253.7467	-4.6217	0.0000	224.2800	-147.9600	-2.3958
20/07/2015	0.0000	363.3500	-253.7467	-4.6198	0.0000	224.2800	-147.9600	-2.3949
21/07/2015	0.0000	363.3500	-253.7467	-4.6184	0.0000	224.2800	-147.9600	-2.3944

22/07/2015	126.1425	370.0100	-258.3941	-4.6156	25.1138	226.3200	-149.3000	-2.3932
23/07/2015	-74.5938	366.0200	-255.6057	-4.6145	-44.6355	222.6500	-146.8800	-2.3919
24/07/2015	-221.2455	354.0400	-247.2404	-4.6130	-49.5264	218.5700	-144.1900	-2.3907
27/07/2015	-221.1485	342.0600	-238.8751	-4.6103	-78.8060	212.0400	-139.8900	-2.3894
28/07/2015	-74.5490	338.0700	-236.0867	-4.6070	-117.1800	202.2600	-133.4300	-2.3881
29/07/2015	75.4295	342.0600	-238.8751	-4.6042	10.0098	203.0700	-133.9700	-2.3868
30/07/2015	151.7510	350.0400	-244.4520	-4.6022	0.0000	203.0700	-133.9700	-2.3861
31/07/2015	75.4110	354.0400	-247.2404	-4.6005	45.4019	206.7400	-136.3900	-2.3851
03/08/2015	50.1830	356.7000	-249.0993	-4.6000	50.4851	210.8200	-139.0800	-2.3831
04/08/2015	-74.5975	352.7100	-246.3109	-4.5990	-34.7565	207.9700	-137.2000	-2.3821
05/08/2015	177.2760	362.0200	-252.8172	-4.5964	-9.9822	207.1500	-136.6600	-2.3807
06/08/2015	-49.8150	359.3600	-250.9583	-4.5940	-145.4793	194.9200	-128.5900	-2.3793
07/08/2015	-148.3020	351.3800	-245.3814	-4.5938	-93.0852	187.1700	-123.4800	-2.3784
10/08/2015	-99.2550	346.0500	-241.6635	-4.5924	-44.5500	183.5000	-121.0600	-2.3768
11/08/2015	-316.7158	328.7500	-229.5804	-4.5913	-177.1770	168.4100	-111.1000	-2.3757
12/08/2015	-99.2048	323.4200	-225.8624	-4.5890	-158.2320	154.9500	-102.2300	-2.3750
13/08/2015	333.5680	340.7300	-237.9456	-4.5867	155.7795	167.1900	-110.3000	-2.3737
14/08/2015	25.0575	342.0600	-238.8751	-4.5853	-9.9756	166.3700	-109.7600	-2.3725
17/08/2015	0.0000	342.0600	-238.8751	-4.5843	0.0000	166.3700	-109.7600	-2.3718
18/08/2015	-245.0858	328.7500	-229.5804	-4.5820	-68.7924	160.6600	-105.9900	-2.3709
19/08/2015	0.0000	328.7500	-229.5804	-4.5808	-54.2328	156.1800	-103.0300	-2.3699
20/08/2015	25.0480	330.0800	-230.5098	-4.5787	-102.0659	147.6100	-97.3800	-2.3687
21/08/2015	-148.1645	322.0900	-224.9330	-4.5771	-125.2104	137.0100	-90.3900	-2.3676
24/08/2015	-363.1433	302.1300	-210.9908	-4.5762	-238.7588	115.8100	-76.4000	-2.3666
25/08/2015	-74.4800	298.1400	-208.2024	-4.5738	10.0386	116.6200	-76.9400	-2.3650

26/08/2015	25.0313	299.4700	-209.1319	-4.5727	-29.6800	114.1800	-75.3200	-2.3636
27/08/2015	203.5255	310.1200	-216.5677	-4.5718	230.7189	131.7100	-86.8900	-2.3634
28/08/2015	-49.7805	307.4500	-214.7087	-4.5691	92.4622	139.0500	-91.7300	-2.3622
31/08/2015	151.9170	315.4400	-220.2856	-4.5678	172.7319	152.5100	-100.6100	-2.3617
01/09/2015	-220.6470	303.4600	-211.9203	-4.5660	30.2480	154.9500	-102.2300	-2.3609
02/09/2015	281.5420	318.1000	-222.1445	-4.5625	-14.9481	153.7300	-101.4200	-2.3606
03/09/2015	177.5505	327.4200	-228.6509	-4.5592	66.1050	159.0300	-104.9200	-2.3595
04/09/2015	50.2200	330.0800	-230.5098	-4.5570	20.0940	160.6600	-105.9900	-2.3587
07/09/2015	-339.9435	311.4500	-217.4972	-4.5553	-153.3251	147.6100	-97.3800	-2.3574
08/09/2015	25.0275	312.7800	-218.4266	-4.5549	5.0094	148.0200	-97.6500	-2.3564
09/09/2015	229.2380	324.7600	-226.7919	-4.5533	20.1116	149.6500	-98.7300	-2.3553
10/09/2015	-49.7915	322.0900	-224.9330	-4.5506	60.9622	154.5500	-101.9600	-2.3540
11/09/2015	75.4600	326.0900	-227.7214	-4.5485	-24.8336	152.5100	-100.6100	-2.3536
14/09/2015	0.0000	326.0900	-227.7214	-4.5490	40.4156	155.7700	-102.7600	-2.3521
15/09/2015	-99.1715	320.7600	-224.0035	-4.5474	50.6464	159.8500	-105.4500	-2.3514
16/09/2015	-123.7230	314.1100	-219.3561	-4.5469	45.5135	163.5200	-107.8700	-2.3507
17/09/2015	25.0628	315.4400	-220.2856	-4.5459	5.0049	163.9300	-108.1400	-2.3497
18/09/2015	-123.6560	308.7800	-215.6382	-4.5439	35.2967	166.7800	-110.0300	-2.3483
21/09/2015	0.0000	308.7800	-215.6382	-4.5416	5.0020	167.1900	-110.3000	-2.3477
22/09/2015	0.0000	308.7800	-215.6382	-4.5400	-39.6171	163.9300	-108.1400	-2.3463
23/09/2015	-292.1050	292.8100	-204.4845	-4.5384	-116.3484	154.1400	-101.6900	-2.3459
24/09/2015	0.0000	292.8100	-204.4845	-4.5355	0.0000	154.1400	-101.6900	-2.3449
25/09/2015	50.2275	295.4700	-206.3435	-4.5342	55.8021	158.6200	-104.6500	-2.3447
28/09/2015	-362.0430	275.5100	-192.4013	-4.5306	-63.9012	153.3200	-101.1500	-2.3438
29/09/2015	126.5110	282.1600	-197.0487	-4.5296	30.2353	155.7700	-102.7600	-2.3423

30/09/2015	-74.4563	278.1700	-194.2603	-4.5277	92.0800	163.1100	-107.6100	-2.3405
01/10/2015	50.2180	280.8300	-196.1192	-4.5282	102.4590	171.2700	-112.9900	-2.3395
02/10/2015	-147.8563	272.8500	-190.5424	-4.5281	50.5895	175.3400	-115.6800	-2.3382
05/10/2015	203.8410	283.5000	-197.9782	-4.5251	209.0325	191.6500	-126.4400	-2.3373
06/10/2015	632.6123	315.4400	-220.2856	-4.5227	-54.3456	187.1700	-123.4800	-2.3358
07/10/2015	203.3500	326.0900	-227.7214	-4.5216	-29.8074	184.7200	-121.8600	-2.3345
08/10/2015	203.2223	336.7300	-235.1572	-4.5191	15.0480	185.9500	-122.6700	-2.3334
09/10/2015	385.9200	356.7000	-249.0993	-4.5164	176.1795	199.8100	-131.8200	-2.3324
12/10/2015	0.0000	356.7000	-249.0993	-4.5135	128.1320	210.0000	-138.5400	-2.3316
13/10/2015	-549.5963	326.0900	-227.7214	-4.5115	-107.6219	201.0300	-132.6200	-2.3311
14/10/2015	0.0000	326.0900	-227.7214	-4.5107	0.0000	201.0300	-132.6200	-2.3294
16/10/2015	177.4710	335.4000	-234.2277	-4.5097	35.2500	203.8900	-134.5100	-2.3277
19/10/2015	203.1250	346.0500	-241.6635	-4.5071	45.4028	207.5600	-136.9300	-2.3272
20/10/2015	-148.2725	338.0700	-236.0867	-4.5034	-78.7321	201.0300	-132.6200	-2.3265
21/10/2015	-24.9205	336.7300	-235.1572	-4.5006	25.1241	203.0700	-133.9700	-2.3257
22/10/2015	-123.7520	330.0800	-230.5098	-4.4986	-131.2677	192.0600	-126.7100	-2.3246
23/10/2015	100.8000	335.4000	-234.2277	-4.4979	159.9874	204.7000	-135.0400	-2.3231
26/10/2015	0.0000	335.4000	-234.2277	-4.4958	60.7034	209.6000	-138.2700	-2.3223
27/10/2015	-49.8125	332.7400	-232.3688	-4.4952	30.1860	212.0400	-139.8900	-2.3206
28/10/2015	-172.5300	323.4200	-225.8624	-4.4949	-69.0437	206.3300	-136.1200	-2.3196
29/10/2015	-268.6560	308.7800	-215.6382	-4.4930	-117.1019	196.5500	-129.6600	-2.3187
30/10/2015	100.8310	314.1100	-219.3561	-4.4909	91.6500	203.8900	-134.5100	-2.3179
02/11/2015	360.1875	332.7400	-232.3688	-4.4889	10.0149	204.7000	-135.0400	-2.3170
03/11/2015	177.4585	342.0600	-238.8751	-4.4876	180.9690	218.9800	-144.4600	-2.3157
04/11/2015	126.2185	348.7100	-243.5225	-4.4860	15.0390	220.2000	-145.2700	-2.3152

05/11/2015	-49.7900	346.0500	-241.6635	-4.4835	0.0000	220.2000	-145.2700	-2.3148
06/11/2015	100.7820	351.3800	-245.3814	-4.4818	-49.5285	216.1200	-142.5800	-2.3141
09/11/2015	-172.6398	342.0600	-238.8751	-4.4806	-19.9354	214.4900	-141.5000	-2.3136
10/11/2015	75.4650	346.0500	-241.6635	-4.4772	-173.7050	199.8100	-131.8200	-2.3123
11/11/2015	280.7560	360.6900	-251.8878	-4.4759	235.0255	218.1600	-143.9200	-2.3119
12/11/2015	-172.7220	351.3800	-245.3814	-4.4746	30.1608	220.6100	-145.5400	-2.3109
13/11/2015	0.0000	351.3800	-245.3814	-4.4721	20.0833	222.2400	-146.6100	-2.3098
16/11/2015	-172.6398	342.0600	-238.8751	-4.4694	-59.3229	217.3400	-143.3800	-2.3091
17/11/2015	-99.2393	336.7300	-235.1572	-4.4677	112.2488	226.3200	-149.3000	-2.3075
18/11/2015	25.0190	338.0700	-236.0867	-4.4656	0.0000	226.3200	-149.3000	-2.3065
19/11/2015	-99.1875	332.7400	-232.3688	-4.4632	117.3629	235.6900	-155.4900	-2.3057
20/11/2015	50.2110	335.4000	-234.2277	-4.4631	190.8038	250.7800	-165.4400	-2.3054
23/11/2015	-49.8125	332.7400	-232.3688	-4.4605	-24.8880	248.7400	-164.1000	-2.3042
24/11/2015	0.0000	332.7400	-232.3688	-4.4589	75.9063	254.8600	-168.1300	-2.3028
25/11/2015	-74.5323	328.7500	-229.5804	-4.4581	70.7693	260.5700	-171.9000	-2.3021
26/11/2015	50.1735	331.4100	-231.4393	-4.4570	106.7220	269.1300	-177.5500	-2.3002
27/11/2015	0.0000	331.4100	-231.4393	-4.4546	-79.0188	262.6100	-173.2400	-2.2994
30/11/2015	-292.6358	315.4400	-220.2856	-4.4526	-54.5330	258.1200	-170.2900	-2.2987
01/12/2015	466.6500	339.4000	-237.0162	-4.4519	232.8252	276.4700	-182.3900	-2.2977
02/12/2015	-74.5290	335.4000	-234.2277	-4.4510	-88.8030	269.1300	-177.5500	-2.2968
03/12/2015	0.0000	335.4000	-234.2277	-4.4487	-19.9424	267.5000	-176.4700	-2.2965
04/12/2015	100.8000	340.7300	-237.9456	-4.4456	-240.2184	247.1100	-163.0200	-2.2959
07/12/2015	126.1935	347.3800	-242.5930	-4.4421	-174.5340	232.4300	-153.3400	-2.2949
08/12/2015	-316.7580	330.0800	-230.5098	-4.4410	0.0000	232.4300	-153.3400	-2.2930
09/12/2015	0.0000	330.0800	-230.5098	-4.4387	0.0000	232.4300	-153.3400	-2.2913

10/12/2015	25.0245	331.4100	-231.4393	-4.4362	153.8700	244.6600	-161.4100	-2.2899
11/12/2015	-316.3580	314.1100	-219.3561	-4.4355	-136.6794	233.2500	-153.8800	-2.2889
14/12/2015	229.2588	326.0900	-227.7214	-4.4339	-126.9996	222.6500	-146.8800	-2.2885
15/12/2015	151.7923	334.0700	-233.2983	-4.4317	20.0750	224.2800	-147.9600	-2.2878
16/12/2015	0.0000	334.0700	-233.2983	-4.4306	65.7584	229.5800	-151.4500	-2.2865
17/12/2015	126.2080	340.7300	-237.9456	-4.4303	86.2750	236.5100	-156.0300	-2.2851
18/12/2015	-123.7430	334.0700	-233.2983	-4.4283	-192.9420	220.2000	-145.2700	-2.2846
21/12/2015	-24.9375	332.7400	-232.3688	-4.4270	55.5684	224.6800	-148.2300	-2.2839
22/12/2015	-172.5300	323.4200	-225.8624	-4.4246	-5.0050	224.2800	-147.9600	-2.2834
23/12/2015	-74.5200	319.4300	-223.0740	-4.4222	20.0825	225.9100	-149.0300	-2.2829
24/12/2015	0.0000	319.4300	-223.0740	-4.4213	0.0000	225.9100	-149.0300	-2.2824
25/12/2015	0.0000	319.4300	-223.0740	-4.4198	0.0000	225.9100	-149.0300	-2.2819
28/12/2015	0.0000	319.4300	-223.0740	-4.4169	-24.8972	223.8700	-147.6900	-2.2807
29/12/2015	25.0640	320.7600	-224.0035	-4.4146	-64.2128	218.5700	-144.1900	-2.2799
30/12/2015	-24.9600	319.4300	-223.0740	-4.4121	-78.8060	212.0400	-139.8900	-2.2793
31/12/2015	0.0000	319.4300	-223.0740	-4.4083	0.0000	212.0400	-139.8900	-2.2784
01/01/2016	0.0000	319.4300	-223.0740	-4.4080	0.0000	212.0400	-139.8900	-2.2777
04/01/2016	-99.1790	314.1100	-219.3561	-4.4058	15.0363	213.2700	-140.6900	-2.2772
05/01/2016	229.2588	326.0900	-227.7214	-4.4018	86.3730	220.2000	-145.2700	-2.2762
06/01/2016	-49.8150	323.4200	-225.8624	-4.4011	196.5200	235.6900	-155.4900	-2.2752
07/01/2016	-99.1850	318.1000	-222.1445	-4.4004	-88.5920	228.3500	-150.6500	-2.2745
08/01/2016	75.4435	322.0900	-224.9330	-4.3985	45.3493	232.0200	-153.0700	-2.2732
11/01/2016	-99.1865	316.7700	-221.2151	-4.3960	-4.9984	231.6200	-152.8000	-2.2723
12/01/2016	-24.9443	315.4400	-220.2856	-4.3938	55.5261	236.1000	-155.7600	-2.2716
13/01/2016	-24.9570	314.1100	-219.3561	-4.3922	25.1120	238.1400	-157.1000	-2.2709

14/01/2016	-24.9688	312.7800	-218.4266	-4.3897	-34.7931	235.2900	-155.2200	-2.2697
15/01/2016	126.3000	319.4300	-223.0740	-4.3874	-14.9527	234.0600	-154.4100	-2.2690
18/01/2016	-99.1790	314.1100	-219.3561	-4.3855	-54.4703	229.5800	-151.4500	-2.2679
19/01/2016	25.0628	315.4400	-220.2856	-4.3850	50.4527	233.6500	-154.1400	-2.2667
20/01/2016	-148.0710	307.4500	-214.7087	-4.3836	40.2924	236.9200	-156.3000	-2.2653
21/01/2016	75.4650	311.4500	-217.4972	-4.3810	222.7680	254.4500	-167.8600	-2.2645
22/01/2016	50.2090	314.1100	-219.3561	-4.3796	132.6650	265.0500	-174.8600	-2.2627
25/01/2016	229.2588	326.0900	-227.7214	-4.3779	30.1432	267.5000	-176.4700	-2.2628
26/01/2016	0.0000	326.0900	-227.7214	-4.3753	20.0640	269.1300	-177.5500	-2.2620

Backtesting Value at risk			
	Total Failure test		
Code	Variance-Covariance	Historical Simulation	Monte Carlo Simulation
ASII	4	242	141
CPIN	4	237	143
GGRM	5	241	134
ICBP	3	247	134
INDF	2	239	136
INTP	8	242	129
KLBF	5	239	141
SMGR	2	243	135
UNVR	12	244	136